The Southern Surgeon

VOLUME XV

1949

THE SOUTHERN SURGEON PUBLISHING CO.

ATLANTA

Medical

CONTENTS OF VOLUME XV

JANUARY, 1949, NUMBER 1

FEBRUARY, 1949, NUMBER 2

University of Virginia Department of Medicine Number

MARCH, 1949, NUMBER 3

APRIL, 1949, NUMBER 4

MAY, 1949, NUMBER 5

JUNE, 1949, NUMBER 6

JULY, 1949, NUMBER 7

AUGUST, 1949, NUMBER 8

University of Oklahoma School of Medicine Number

SEPTEMBER, 1949, NUMBER 9

OCTOBER, 1949, NUMBER 10

NOVEMBER, 1949, NUMBER 11

DECEMBER, 1949, NUMBER 12

Biloxi, Miss., Assembly—May 23, 24, 25, 26, 1949

VOLUME XV JANUARY, 1949 NUMBER 1

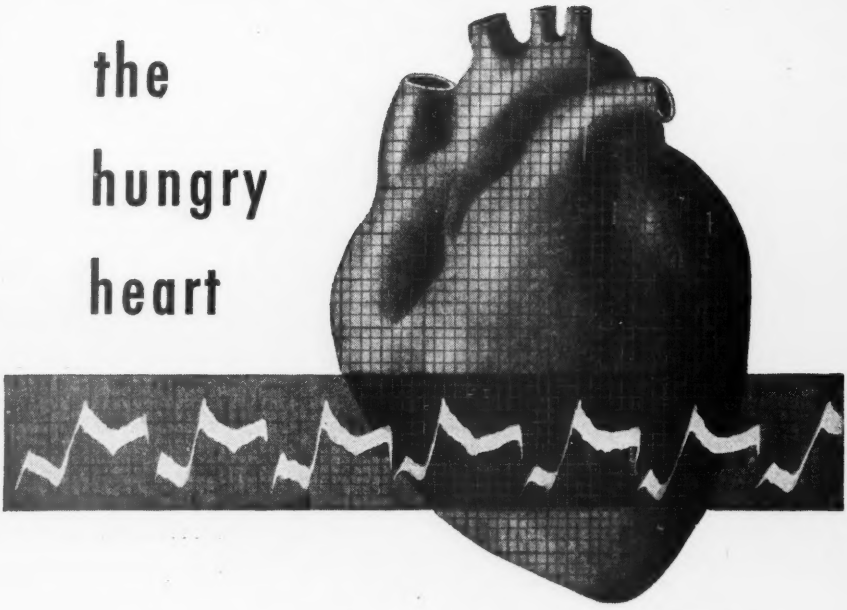
The Southern Surgeon

CONTENTS

Published Monthly
by
THE SOUTHERN SURGEON PUBLISHING CO.
701 Hurt Building
Atlanta 3, Ga., U.S.A.

Entered as Second-Class Mail Matter June 25, 1946, at the Post Office at Atlanta, Ga., Under the Act of March 3, 1879.

the hungry heart



When myocardial circulation is impaired, the failing heart literally undergoes starvation.

Sound therapeutic management must therefore aim to increase myocardial nutrition and strengthen heart action. It must also promote and maintain an active and adequate output of urine without damage to the kidneys. And, in most instances, it should also provide an even, mild sedation, to allay worry and nervous tension and slow down the rate of living.

Proven in value through years of exacting clinical use, TCS Tablets supply these needs safely and efficiently.

DOSAGE: In myocardial insufficiency, cardiac edema and acute coronary conditions, the average dosage is two tablets, three or four times daily, and reduced with improvement. In hypertension, angina pectoris and post-occlusional states, one tablet, three or four times daily.

Each tablet contains theobromine salicylate, 6 gr., calcium salicylate, 1 gr., and phenobarbital, ¼ gr. Available in bottles of 50 and 250 tablets.

TCS *tablets*

POYTHRESS
RICHMOND • VIRGINIA

WILLIAM P. POYTHRESS & CO., INC.

The
Southern Surgeon

Vol. XV, No. 1 January, 1949

PHYSIOLOGIC CHANGES FOLLOWING VAGOTOMY FOR PEPTIC ULCER

R. Arnold Griswold, M.D.
Louisville, Ky.

THE current procedure of vagotomy for the treatment of peptic ulcer originated in Chicago with the very fine work of Dragstedt and his associates.

In treating any disease we should know something of the background and the cause of the disease. Peptic ulcer, we now believe, is a disease due to disordered gastric physiology rather than one due to infection or trauma. There are a great many things that will produce an active peptic ulcer, but it takes disordered physiology of the gastric secretory mechanism to produce the chronic peptic ulcer which we find in human beings. It has only been produced in animals by changing the physiology of gastric secretion, as by the implantation of histamine as shown by Wangensteen or by shunting the alkaline juices away from the area of contact of the gastric secretion as is done in the Mann-Williamson operation. In many cases we find abnormal psychosomatic factors which may be the cause of the disordered physiology. The thing that makes peptic ulcer a chronic recurring disease is the increased ability of the gastric juice to digest the mucosa of the gastro-intestinal tract. We ordinarily measure this in terms of acidity, since this is a convenient clinical procedure. However, the really important thing is the peptic activity. What we are really thinking of is the peptic activity of the gastric juice, that is, the proteolytic action of pepsin when activated by hydrochloric acid.

Peptic ulcer is primarily a medical disease. Except for acute emergencies it is not surgical until the patient has had adequate medical therapy. When it is still resistant to good medical therapy,

Read before the sixteenth annual Postgraduate Surgical Assembly of The Southeastern Surgical Congress, Hollywood, Fla., April 5-8, 1948.

then surgery is indicated. In speaking of the surgical treatment of peptic ulcer it should be thoroughly understood that the only treatment for gastric ulcer should include excision of the ulcer; not only because we believe that gastric ulcer may become malignant, but because in gastric ulcers which are clinically benign by x-ray, clinical tests and even examination of the stomach in the operating room, we find that 10 to 17 per cent turn out to be malignant on microscopic examination. Therefore, the proper treatment for gastric ulcer is subtotal gastric resection.

There are two types of stimulation of gastric secretion; one is the cephalic phase which comes down the vagus nerve and acts directly on the acid and pepsin cells in the fundus and body of the stomach. This cephalic secretion is motivated by a number of factors: (1) the thought, taste and smell of food; (2) certain intracranial lesions; (3) hypoglycemia and (4) other factors which we classify under neurosis—that is, the fellow who does not like his job or his wife. The other form of stimulation of gastric secretion which we call humoral or chemical is initiated in the antrum of the stomach and, to a lesser degree, in the intestines. The presence of food, particularly protein, in the antrum of the stomach, liberates a hormone called gastrin which may be similar to histamine, which acts on the secretory cells in the fundus and body of the stomach. The presence of alcohol, caffeine or histamine in the blood has the same action. This humoral stimulation produces gastric juice which is high in hydrochloric acid but low in pepsin content. The cephalic stimulation causes secretion of gastric juice which is high in hydrochloric acid and also high in pepsin. It is therefore higher in peptic activity.

It is probable that the vagal secretion on the fasting stomach is more important in the production of ulcer than the humoral secretion. Humoral secretion is likely to be neutralized and diluted by food and buffer substances. This is illustrated by the fact that patients characteristically have pain on an empty stomach when there is no food to dilute or neutralize the excess secretion. Excess vagal secretion, which acts on an empty stomach, is therefore more important in the production of chronic ulcer than is humoral secretion, which normally occurs only in a stomach which contains food to neutralize and dilute secretion.

Most of the treatment of peptic ulcer has been directed toward reducing the peptic activity of the secretion by neutralizing the acid factor and preventing activation of the pepsin. This treatment includes diet, alkalies and drugs, and the operation of gastroenterostomy which neutralizes acidity by diverting the alkaline biliary and pancreatic juices back into the stomach. Subtotal gastric resec-

tion attempts to diminish the humoral secretion by excising the gartrin-producing antrum and also, unless a Billroth I type of anastomosis is done, gastric resection takes advantage of the neutralizing action of gastroenterostomy. Vagal stimulation may be diminished or abolished by mental and physical rest, by drugs of the belladonna group, or by section of the vagus nerves.

We would expect, from theoretical consideration, to have ulcers caused by either of the two types of gastric stimulation. One should be an ulcer caused by humoral stimulation which should respond to subtotal resection. Another type we would expect to follow excess vagal stimulation, and that type should be treated by vagotomy. We know that gastroenterostomy will cure perhaps 75 to 85 per cent of ulcers without recurrence or gastrojejunal ulcers. We also know that subtotal gastric resection will cure 90 to 95 per cent of ulcers in the patients who survive the operation. There have now been enough vagotomies done to indicate that vagotomy will cure 90 to 95 per cent, about the same cure rate as for gastric resection.

Both vagotomy and gastric resection have certain side-effects which are undesirable. After gastric resection there is the so-called dumping syndrome in some cases, and in others difficulty in emptying of the stomach with inability to gain weight. Following vagotomy there is retention of food in the stomach and diarrhea. The ulcer cure rate for these two operations is about the same. The mortality rate following vagotomy is probably less than that following subtotal resection in average hands. With a 90 to 95 per cent cure rate in either operation with equivalent undesirable side-effects, I think we must consider gastric resection and vagotomy both to be good surgical procedures for peptic ulcer. However, following either procedure we still have 5 to 10 per cent recurrent ulcers. The treatment of these recurrences depends upon what they have had done before. If the patient has had a recurrence after subtotal resection we think of vagotomy. If he has had a recurrence after vagotomy we think of resection. It seems, by certain studies now being done, that we will eventually be able to differentiate between the ulcer which is due to excess humoral secretion and the one which is due to excess vagal secretion. If we can do that, we can improve our results by better selection of cases for gastric resection of vagotomy. This work is not as yet in the clinical stage, although experimentally it appears that it is possible.

A study of gastric secretion of 17 patients before and after vagotomy showed the average 12 hour secretion before operation to be 1300 c.c.; free acid, 45. After vagotomy, the average secretion was 271 c.c. in 12 hours and 1 degree acid. The physiologic effects following vagotomy concerned both the motor and secretory func-

tion of the stomach. The secretory rate, particularly that due to vagal stimulation, decreases following vagotomy (fig. 1). Emptying rate likewise decreases since this is a function of the motor

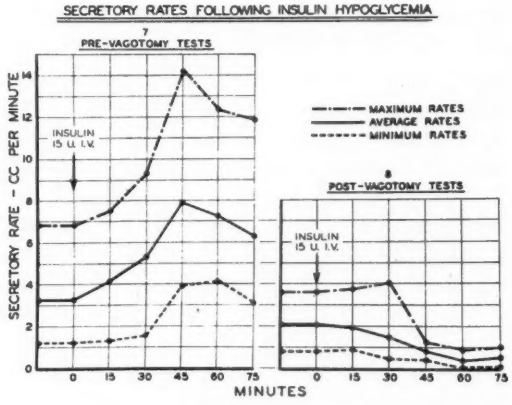


Fig. 1

activity of the stomach (fig. 2). In addition to the decrease in secretory rate there is a marked decrease in the concentration of acid and pepsin in the gastric secretion (fig. 3). Before operation

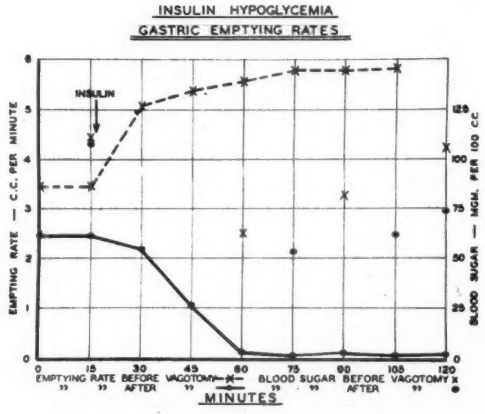


Fig. 2

the secretory rate, as measured in cubic centimeters per minute, increases markedly when we stimulate the vagus by insulin hypoglycemia as also does the acidity and the peptic activity. Following vagotomy, in response to hypoglycemia stimulation of the vagus,

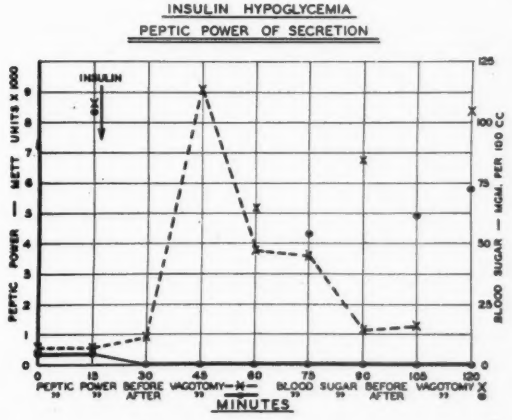


Fig. 3

we find the basal acidity and the secretory rate do not increase, so that by vagotomy we have reduced the acidity of the gastric juice in both quantity and concentration. The sham meal, which is likewise a cephalic secretion test, shows the same thing (figs. 4 and 5).

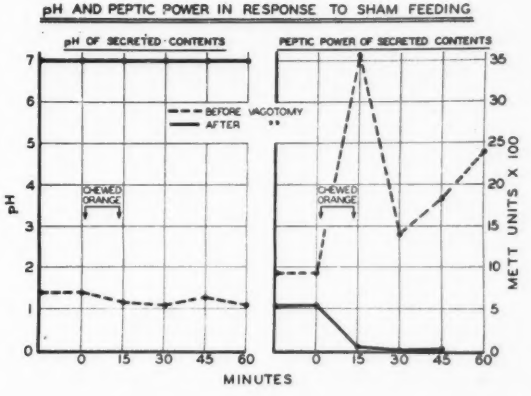


Fig. 4

The patient is intubated, the basal gastric secretions are measured and the patient is allowed to chew a piece of food but not to swallow any of the food or the juice. Before vagotomy we find an immediate response both in quantity of the gastric juice and in its acid and pepsin concentration. Following vagotomy, in response to such a sham meal, we get no appreciable change in gastric juice in either amount or quality.

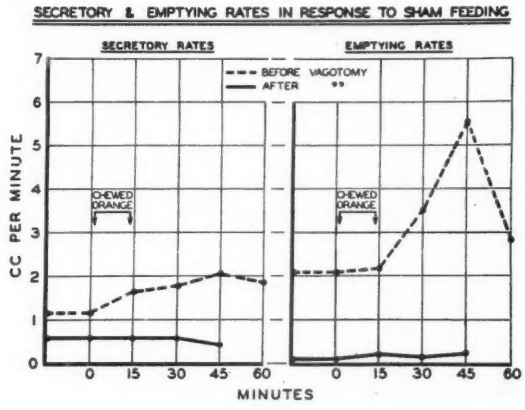


Fig. 5

The question has been asked, are we going to make these patients achlorhydric? We do not, because there is still present in the antrum, and the intestines, the humoral gastric stimulating factor, so that following vagotomy we get a response to histamine as we did

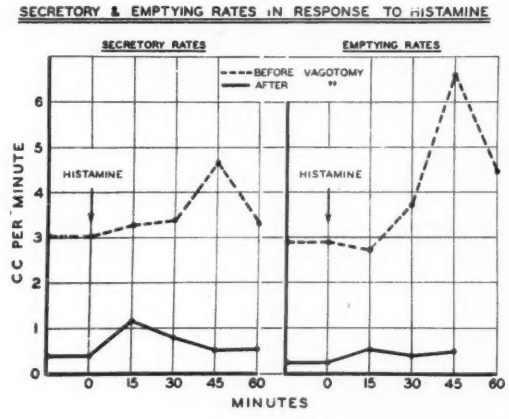


Fig. 6

before vagotomy. The response to this humoral stimulation, however, is not quantitatively so great as before vagotomy (figs. 6 and 7). Since this humoral response is normally caused only by the presence of food in the antrum, the secretion so produced is diluted and neutralized by food and is not an important factor in the pro-

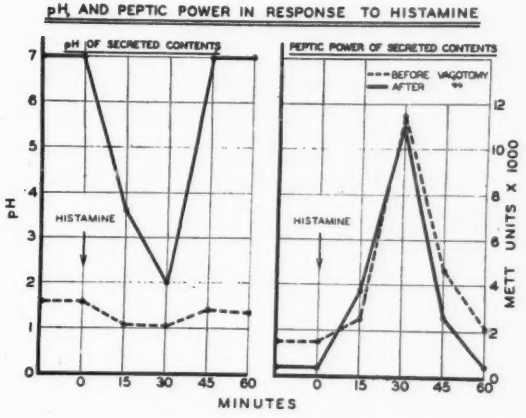


Fig. 7

duction of recurrent ulcer, unless there is an abnormally high response.

Following vagotomy, we get certain undesirable side-effects which have been emphasized in the literature. The most important is the reduction in motor activity of the stomach so that there is a delay in emptying. As a consequence of this delay in emptying, we get fermentation and putrefaction of retained food in the atonic stomach. Probably the diarrhea which occurs is due to the formation of irritating products following fermentation and putrefaction since, at least in my experience, diarrhea has only occurred in the presence of marked gastric retention with foul gastric contents and the diarrhea disappears when gastric retention improves. It has been shown that vagotomy itself does not produce diarrhea as a direct effect on the intestines. For instance, in transthoracic-esophago-gastrectomy, both vagus nerves are sectioned, but we do not have diarrhea following such an operation.

The percentage of drainage operations, which should be performed in addition to vagotomy, is debatable. Because of the decreased muscular activity of the stomach, vagotomy can convert incomplete retention into relatively complete retention. I have found as time goes on that I have done more drainage operations in conjunction with vagotomy. We believe we are now able to tell which patient should have a drainage operation in order to avoid postoperative retention and diarrhea. When we remember that the stomach with ulcer is a hypermotile, hyperactive stomach, we would not expect it to retain food for four or five hours as a normal stomach will. For that reason, we are advocating drainage opera-

tions on all patients who have retained barium in the stomach at the end of two and one-half or three hours since we feel that such retention indicates partial obstruction and that this partial obstruction may be made complete by reducing the propulsive power of the stomach following vagotomy. Since we have followed this plan, we have eliminated in a small series the retention and diarrhea which formerly accompanied a considerable percentage of our vagotomies.

THE TREATMENT OF METASTATIC CANCER OF THE THYROID

A Report of Unusual Cases

WILLIAM TREVOR, M.D.
GEORGE T. PACK, M.D.
New York City

THE prognosis of metastatic cancer of the thyroid is not hopeless. This is well illustrated by the following two case reports of cerebral and vertebral metastases with *survival of the patients for 14 and 6 years* respectively. The first case is almost unbelievable in that the patient has survived 14 years following surgical extirpation of metastatic thyroid cancer in the brain.

Thyroid cancer would be practically non-existent if a simple rule were followed; namely, the routine surgical removal of all thyroid adenomas. This policy is certainly in line with the precept that all breast tumors should be surgically removed. The consensus of authoritative opinion is that thyroid carcinoma usually arises in pre-existing adenomas. This incidence is placed as high as 80 per cent by some authors. The incidence of carcinoma in diffuse toxic goiter (Graves' disease) is extremely rare, almost to the point of being non-existent. The average age for the onset of cancer is in the decade from 40 to 50. In children, the incidence of carcinoma in non-toxic nodular goiter is very high. The sex factor is important in that a man's chance of having cancer in his nodular goiter is almost three times that of a woman. In men, there is one thyroid cancer to every 17 surgical goiters. In women, there is one thyroid cancer to every 44 surgical goiters.

Potentially the most dangerous lesion of the thyroid in respect to cancer is the solitary thyroid nodule. The incidence of cancer in the single thyroid nodule may be as high as 25 per cent. The size of the nodule is unimportant as carcinoma has been found in adenomas only a few millimeters in diameter. The age of the patient is unimportant as the occurrence of carcinoma in solitary adenoma in the first and second decade is surprisingly frequent.

The treatment indicated for encapsulated malignant growths is hemithyroidectomy followed by irradiation with a lower limit of 3,000 roentgen units. The opposite thyroid lobe should be palpated beneath the pre-thyroid muscles. Since thyroid carcinoma is sometimes radiosensitive, good results have been reported in inoperable cases with radium and roentgen rays. If neighboring structures are involved, such as the sternomastoid, sternothyroid and sternohyoid muscles, these are all removed with the cervical lymph nodes and

the internal jugular vein, that is, a radical neck dissection. At least one recurrent nerve, one parathyroid, and the common carotid artery should be preserved.

The prognosis is influenced by (1) the type of cancer, (2) the grade of malignancy, and (3) the presence of metastasis. In order from least malignant to most malignant, tumors of the thyroid may be classified as follows: (1) papillary adenocarcinoma, (2) malignant adenoma, (3) diffuse adenocarcinoma, (4) sarcoma, and (5) spindle cell carcinoma. Approximately 70 per cent of all thyroid carcinomas will fall into the first two classes of papillary adenocarcinoma and malignant adenoma, which are the least malignant, and 70 per cent of these patients will survive 5 years after surgical treatment. The majority of thyroid carcinomas are of low grade malignancy. As regards distant metastasis, it is known that pulmonary metastases may remain stationary for many years after removal of the primary tumor. This apparently is the case in our first patient.

Metastatic carcinoma of the thyroid behaves in a very bizarre fashion. Its course is unpredictable if radical surgical treatment with postoperative irradiation is followed. The prognosis is difficult to evaluate following aggressive therapy. In hopeless cases, palliation far beyond one's greatest hopes is encountered. The tenets of treating other types of metastatic cancer do not hold for metastatic thyroid cancer since it is very often amenable to radical surgical procedures and radiation therapy. In metastatic thyroid cancer it is a good rule to treat the disease where you find it. The surgeon is justified in operating even if he cannot remove all of the accessible cancer since there will be so much less to control by irradiation.

CASE 1. *Thyroid Carcinoma at Puberty—Advanced, Inoperable, Unilateral Cervical Metastases Controlled by Combination Surgery, Irradiation, Interstitial Radium Therapy—Cerebral Metastasis Confirmed by Craniotomy and Removed—Survival 14 Years.*

D. B., a white female, aged 12 years, was first seen by one of us (G.T.P.) on Aug. 22, 1934. The chief complaint was an enlarged cervical lymph node of 2 years' duration. The mother had first noticed a small firm lymph node in the right supraclavicular space. This slowly increased in size. One year later, in 1933, a second, larger lymph node was found under the angle of the right side of the mandible. This was attributed to tonsillitis so the tonsils were removed. During the next 4 months the patient started to menstruate and menstruated regularly each month. At this time these cervical nodes had begun to grow very rapidly. Another nodule was found in the right lobe of the thyroid gland. The lymph node in the supraclavicular space was excised for biopsy at an out-of-state hospital with a diagnosis of metastatic carcinoma secondary to thyroid cancer. A few days later an excision of the nodule of

the right lobe of the thyroid gland weighing 12.5 grams was performed at the same hospital by Dr. Lee Turlington, of Birmingham, Alabama. It was adherent to the right sternohyoid muscle which was removed with the mass. The left lobe of the thyroid gland was examined and considered normal.

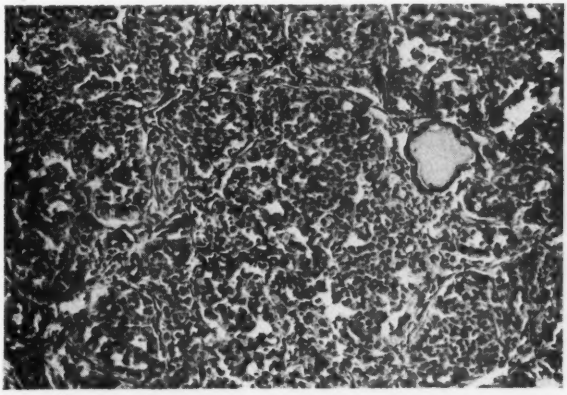


Fig. 1. Carcinoma of thyroid occurring in 12 year old girl (Case 1).

The microscopic diagnosis on the submitted slide by Dr. Fred Stewart was "solid and small alveolar carcinoma of the thyroid" which he considered relatively radioresistant.

On physical examination the patient was a well-developed 12 year old girl weighing 80 pounds. The significant observations were limited to the neck. In the right tonsillar group of lymph nodes there was a subcutaneous, elastic, freely movable lymph node measuring 3 by 2.5 by 2.5 cm. In the outer third of the right supraclavicular space two fingers' breadth above the clavicle there was a scar of the previous biopsy underneath which an indurated tumor 1.5 cm. in diameter could be felt. A transverse scar over the thyroid was well healed. There was some induration beneath the scar but no signs of recurrence.

On August 23 Dr. Ralph Herendeen reported no definite evidence of lung metastasis seen in the film of the chest, although there was a suspicious nodule in the parenchyma on each side of the hilum.

On September 22 (after consultation with Dr. Lloyd F. Craver), at the Memorial Hospital the patient received preoperative high voltage x-ray therapy in fractionated doses (300 r alternating daily) through 3 portals, one to the left neck and two to the right neck, for a total of 2100 r to each area. When the severe second degree radiation reaction had subsided, exposure and implantation of gold radon seeds in the right carotid lymph nodes was planned.

On October 29, evidence of metastases in the lungs was noted in the film of the chest, as compared with the previous film.

On November 5, the right side of the neck was explored by one of us (G.T.P.) through a 4 cm. incision parallel to the posterior border of the sternomastoid muscle. At the level of the superior pole of the right lobe of the

thyroid, a mass measuring 4 by 3 by 1.5 cm. was found. It was very adherent to the surrounding structures and very well encapsulated and was removed in toto. At the superior pole of this mass there were smaller lymph nodes 1.5 cm. in length, which were replaced by metastatic carcinoma; they were left

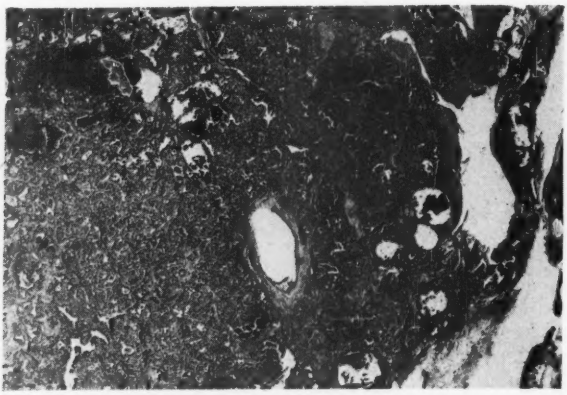


Fig. 2. Metastatic thyroid carcinoma in choroid plexus. Patient living and well 14 years after surgical removal (Case 1).

in place and were treated by gold radon seeds; 10 seeds totalling 14.3 millicuries were inserted. The microscopic report on this lymph node by Dr. Fred Stewart was adenocarcinoma of the thyroid.

On April 30, 1935, on a follow-up visit the patient said that she had recovered from influenza. For the past 2 months she had had intermittent headaches accompanied by nausea and occasional vomiting. For two weeks she had had diplopia. An examination of the nasal accessory sinuses in Birmingham was negative. An eye examination in Birmingham showed only weakness of the muscles of the eyes. The possibility of intracranial metastasis was considered. Her weight was 91 pounds.

On May 1, the x-ray film of the chest revealed evidence of numerous deposits of metastatic cancer throughout both lung fields. When compared with previous films there was very little change in the number and size of these deposits.

On May 2 borderline papilledema was present in the left disc and the right disc showed some obscuring. Central diplopia to distant vision was present. The spinal fluid pressure was 360 mm. of water. The spinal fluid was normal with a low normal protein content.

On May 18 the eyegrounds showed increased papilledema and it seemed evident a tumor was the causative factor.

On May 22 a ventriculogram revealed yellow cystic fluid released when the exploring needle was directed to the posterior horn of the left lateral ventricle. Roentgenograms showed a large tumor in the posterior portion of the left hemisphere. On the ground that it was theoretically possible that this might be an independent primary tumor of the brain and amenable to operation, craniotomy was performed by Dr. Byron Stookey. Dr. Stookey found

and removed completely a mass appearing to be a tumor of the choroid plexus which had blocked the posterior horn of the left lateral ventricle so that it had developed a cystic dilation. The patient did very well postoperatively and was discharged June 11.

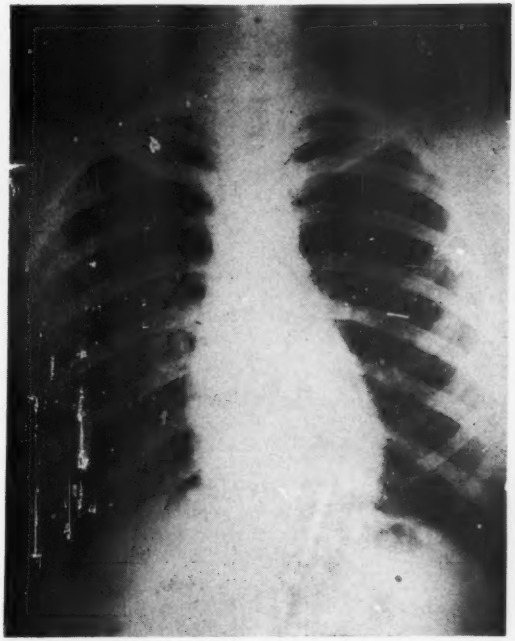


Fig. 3. Roentgenogram of chest showing pulmonary metastases secondary to carcinoma of thyroid gland. Date of x-ray film—Feb. 18, 1936. Patient now living and well (Case 1).

Micro-examination of the tumor showed characteristic colloid thyroid hyperplasia with occasional invasive areas. Dr. James Ewing was of the opinion that the choroid plexus tumor had metastasized by embolic transfer.

On April 5, 1937, a comparison of the film of the chest with those made Dec. 28, 1936, showed no appreciable change in the appearance of both lung fields.

On Jan. 23, 1939, evidence of metastases to the lungs was seen to persist in these views of the chest, but by Jan. 16, 1941, the chest plate showed no definite evidence of lung metastasis.

On Jan. 17, 1941, there was an excision of two lymph nodes superficial to the left submaxillary gland and a second lymph node deeper and posterior to the left submaxillary gland. Pathologic report on these nodes was lymphoid hyperplasia with no evidence of metastatic carcinoma.

Examination of submitted films, dated Jan. 17, 1943, was negative; there was no evidence of lung nor of skeletal metastasis.

April 9, 1943: Examination of submitted film of the chest gave essentially negative findings relative to the lungs.

A letter received from Dr. Turlington on Oct. 18, 1945, stated that the patient was apparently in perfect condition and was now the mother of a 6 months old baby.

On Jan. 21, 1948, the father of the patient wrote that she was "in excellent health, and the mother of two daughters, ages three and one-half and six months respectively."

CASE 2. *Metastatic Thyroid Cancer in Spine from Unrecognized Primary Site. Paraplegia, Radiation Therapy alone, Complete Recovery of Sensory and Motor Function with Unlimited Ambulation—Pathologic Fracture of Femur after 5 Years—Palliative Relief—6 Years.*

L. M., a white female, aged 55, was first seen on Nov. 26, 1941. The chief complaint was inability to walk for 13 months. The symptoms began with back pain now of 2 years' duration. On March 4, 1941, at another hospital a spinal fusion was performed with hospitalization for 8 weeks. The patient began to walk a little but with recurrence of the pain. For the past 2 months prior to our examination she had been completely unable to walk.

The past history was not remarkable except there had been 4 normal pregnancies with the appearance of a small thyroid tumor during the first pregnancy.

The positive findings on physical examination were a prominent mass in the mid-line region of the thyroid measuring 4 by 4 cm. and paralysis of both lower extremities. Motion of the left leg was very slight; of the right leg, absent. From the knees down, the skin was shiny, atrophic, and cold. Position sense was absent in the feet. Touch was distinguished but not accurately nor acutely. Deep reflexes were hypoactive on right and absent on the left. The patient was not incontinent for urine. There was tenderness from the eleventh dorsal vertebra to the first lumbar. The sensory level to pain at D10-11 segment level was maintained. The vibratory sense was impaired, more on the right than left. There was spasticity of the legs with voluntary paralysis and bilateral Babinski signs.

On December 3 an aspiration biopsy of the thyroid was reported as positive for carcinoma.

The roentgenogram of the spine, ribs, and pelvis on November 28 showed "an elliptical area of bone destruction involving the inferior portion of the 10th dorsal vertebra, right half of 11th dorsal vertebra and the right upper portion of the 12th dorsal vertebra. This is associated with a soft tissue mass and accompanying destruction of the proximal end of the right 11th rib. An operative procedure has been performed in this region and a bone graft has been placed in the paraspinous area. There is an acute scoliosis at this site, and there may be a pseudo-arthrosis at the apex of the scoliosis. These findings are consistent with metastases of thyroid origin."

The treatment consisted of high voltage radiation therapy to the thyroid gland, 3000 r with 220,000 volts at 50 cm. T.S.D., and 2400 r to the tenth, eleventh, and twelfth dorsal vertebrae using 250,000 volts at 70 cm. distance with 1.5 mm. copper filter over a 21 by 13 cm. field. The patient was discharged from the hospital on December 21.

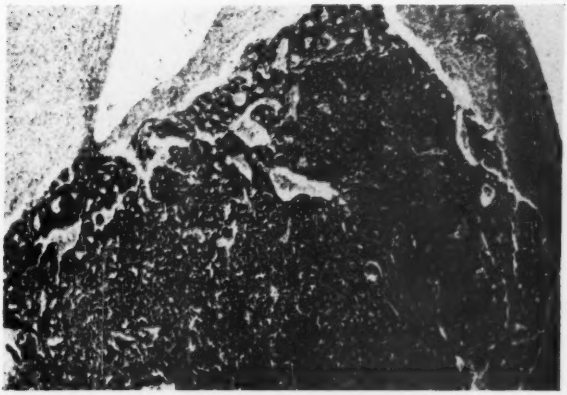


Fig. 4. Aspiration biopsy of thyroid carcinoma (Case 2).

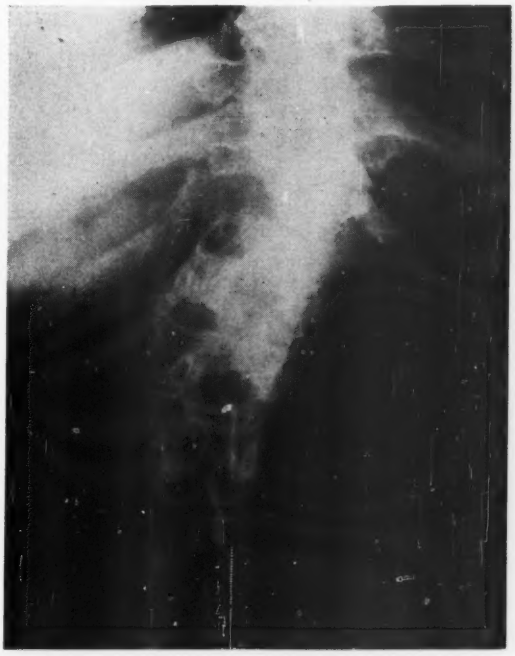


Fig. 5. Roentgenogram of spine showing marked destruction of 11th and 12th thoracic vertebrae by metastatic thyroid carcinoma (Case 2).

On Feb. 12, 1942, the patient was readmitted to the hospital. The interval note revealed that in the past two months the patient had slowly regained partial strength and use of the legs. Walking was possible with slight support. The appetite had been good for the past few weeks and there was a gain of several pounds.

Physical examination revealed radiation pigmentation of the anterior neck over the thyroid, and a walnut-sized tumor just to the left of the mid-line which felt slightly cystic and moved only slightly on swallowing. No cervical lymph nodes were palpable. The lower extremities were weak but had a fair range of motion, the left greater than the right. The reflexes were more active on the right.

On February 14, under local anesthesia, 15 gold radon seeds were inserted into thyroid nodule for a total dose of 23.2 millicuries or 3086 millicurie hours. The patient was discharged the following day.

On March 16, on a follow-up office visit, the thyroid carcinoma was regressing. The patient could walk well without difficulty and the paralysis had disappeared. She had no rectal or urinary incontinence, but some pain in the lower lumbar region. Roentgenograms of lumbar spine showed marked atrophic and hypertrophic changes with the fifth lumbar vertebra affected to the greatest degree.

On July 14 there was no clinical evidence of metastasis. The mobility of the spine was good, and the chest was clear.

On Jan. 14, 1943, the patient reported she walked everywhere and felt well. There was no paralysis.

On April 15, 1943, the patient was in good general health, but complained of pain in the left lower ribs posteriorly. A roentgenogram showed the same defect of the eleventh dorsal vertebra. There was marked angulation of the spine pointing laterally and to the left side at this point. A Taylor spinal brace was prescribed and applied.

On Feb. 17, 1945, the patient had been well for the intervening 2 years but now believed the thyroid nodule was getting larger. This was observed one month later, and no increase in size was noted.

On Aug. 20, 1946, a pathologic fracture of the left femur with bad displacement occurred. During the previous year she had been comfortable except for episodes of back pain relieved by empirin compound No. III. The patient was admitted to St. Clare's Hospital where Dr. William V. Healey attached a Lane plate on the left femur at open reduction. A biopsy at the site of the fracture was reported as metastatic thyroid carcinoma. Radiation therapy to the anterior and posterior left thigh for a total of 2400 roentgen units to each port was given. A chest plate taken at hospital revealed pulmonary metastasis.

On Oct. 22, 1947, the daughter-in-law wrote that patient had no symptoms referable to the chest. The only complaint was a persistence of the pain in her back. There was no pain in the leg.

SUMMARY

1. Metastatic thyroid cancer is occasionally controllable even though distant organs are involved.

2. Radiation therapy may afford unexpected palliative relief in cases of advanced thyroid cancer.

3. It is sometimes impossible accurately to pronounce a given case of thyroid cancer as hopeless or to predict the longevity of any patient so afflicted.

4. A case report is presented of a thyroid carcinoma developing at puberty in a 12 year old girl. The inoperable cancer involving unilateral cervical lymph nodes was controlled by combined surgery, x-ray and interstitial radium therapy. Cerebral metastasis was confirmed and removed by craniotomy with present postoperative survival of 14 years.

5. A case report is presented of a thyroid cancer metastatic to the spine with paraplegia. Radiation therapy alone resulted in complete recovery of sensory and motor functions with unlimited ambulation. A pathologic fracture of a femur occurred 5 years later. The total period of palliative relief has been for 6 years.

139 East 36th St.
New York 16, N. Y.

GLYCERIN OSMOTIC DRAINAGE IN PERITONITIS

E. Dargan Smith, M.D., F.A.C.S.,
and
Robert W. Smith, M.D.
Owensboro, Ky.

THE mortality from acute, diffuse, secondary peritonitis has declined perceptibly during the past decade. This improved prospect of recovery is due to a number of factors; parenteral fluids which more adequately supply the patient's physiologic needs, the availability of improved antibiotics, a recognition of the advantages of spinal anesthesia, the free use of intestinal decompression, a better understanding of the physiology of drainage, and the stimulation of biologic response by direct treatment of the infected membrane.

In a previous paper[10] one of us advocated the intraperitoneal use of pure glycerin as an osmotic and antiseptic agent in peritonitis. We now wish to offer our evaluation of glycerin osmotherapy after using it in the treatment of peritonitis for over ten years. Our own experience and the encouraging reports from others convince us that the procedure is one of the most valuable of the various factors at our disposal which contribute to recovery from diffusing peritonitis and that its more general adoption would further decrease the mortality rate in this condition.

Application of the term "peritonitis," within the scope of this paper, is limited to diffusing, secondary peritonitis such as occurs following the rupture of a gangrenous appendix, necrosis of colon malignancy, or pelvic suppuration. Although many bacteria may be involved the chief causative organisms of peritonitis are assumed to be Escherichia Coli and the non-hemolytic streptococcus, in keeping with the findings of McClure and Altemeier[6] who observed E. Coli in 77.7 per cent and the non-hemolytic streptococcus in 21 per cent of 198 cases of peritonitis following acute perforated appendices.

In the process of diffusing peritonitis, inflammatory edema, by widening the lymph channels and building up an area of positive lymph pressure, tends to disseminate the infectious process and its toxins through the radiating lymph vessels. This lymphangitis may be relieved and the lymphatic flow reversed to the wound by the application of the principle of osmosis. In abdominal osmosis the solvent is the fluids in the lymphatic and tissue spaces of the inflamed area. These fluids pass through the superficial tissues and

---

Read before the sixteenth annual Postgraduate Surgical Assembly of The Southeastern Surgical Congress, Hollywood, Florida, April 5-8, 1948.

the peritoneum, which is the semipermeable membrane, due to the osmotic tension established by the solute, or glycerin, within the abdomen.

The osmotic pressure evoked by glycerin is marked since physiologic fluids are isosmotic with 2.47 per cent glycerin. Drainage, then, from edematous tissue is quite profuse, the theoretical limit being about 40 times the volume of the U.S.P. glycerin solute.

It is pertinent to recall that Schrader[9] recovered 105 c.c. of peritoneal fluid from the abdomen of a 16 kilogram dog 45 minutes after the intraperitoneal injection of 25 c.c. of glycerin, and Remington-Hobbs observed dramatic clinical results from osmotic drainage of infected tissues by injecting pure glycerin within the uterus for septic conditions of that organ. While glycerin is a very effective antiseptic agent, Hobbs[4] and his co-workers attributed the benefits from its use chiefly to its action as a lymphagogue setting up drainage of the tissues which resulted in a washing away of the bacteria from the surface and the deeper parts of the inflamed tissue.

In diffuse peritonitis stagnant fluids accumulate within the infected abdomen and plastic exudates form and glue together the surrounding serous surfaces in an effort to set up a barrier to the spread of the infection. Glycerin tends to remove the infected fluids and decreases the need for exudates which serve as bacterial pablum. This process, by shortening the duration of the infection, decreases the incidence, density and permanence of subsequent adhesions.

Numerous substances, as iodine, ethyl alcohol and ether, have been advocated for local application in peritonitis with the idea of asepticizing the infected membrane. The anticipated benefits from such a procedure gives it a distinct appeal, but unfortunately most of the agents suggested for this purpose have a very unfavorable ratio of cytobacterial activity and destroy endothelium and protective leukocytes in concentrations lower than needed for even bacteriostatic action. An antiseptic suitable for intraperitoneal use must not only be effective against the causative organisms of peritonitis but must have an adequate leukocytic indifferent zone of cytobacterial activity as well. The physical properties of glycerin and the biologic responses of the body to its presence cause it to approach the ideal as a preparation for use within the abdomen.

Compton[1] seems to have conducted the first extensive investigation of the effects of glycerin on inflamed tissue. He found no evidence of cellular damage by the application of pure glycerin to the uterine endometrium and demonstrated a definite antiseptic action of glycerin for bacteria. He concluded that there is a sufficient

difference between the toxicity of glycerin for the tissue cells and for the invading organisms to warrant that it be pushed to its extreme degree as an antiseptic and bactericidal agent, as is obviously attempted when pure glycerin is injected into the uterus.

Fleming[8] seems to have provided a rather definite experimental answer to the question under consideration using leukocytes to represent tissue cells and the staphylococcus to represent the invading organism. Leukocytes, which are rather fragile tissue cells, tolerated glycerin concentrations of 41.7 per cent while the staphylococcus, which is usually considered to be a fairly resistant type of organism, was killed by glycerin concentrations of 26.3 per cent or below. The streptococcus, which is more frequently a causative organism in peritonitis, is killed by glycerin in half the time required by the staphylococcus.

A number of observations have been made on the effects of glycerin on bacterial growth. Ruediger[8] showed that in a 50 per cent concentration of glycerin in physiologic saline all non-spore bearing organisms died in less than 4 days. Using Bacillus Coli as the test organism, Winslow and Holland[14] investigated the effects on bacteria of glycerin in varying concentrations. They found that in strengths above 28 per cent glycerin exerted a distinct bactericidal action, and that at 46 per cent, which is approximately the point of leukocytic tolerance, glycerin eliminated 83 per cent of the colon bacilli in 18 to 24 hours.

TABLE 1.

Condensation of Winslow and Holland's Findings

Concentration of glycerin solution.	Percentage of B. Coli present after incubation at 37°. Time in hours.				
	2-3	4-5	5-7	8-9	18-24
27.6 per cent	—	—	—	—	52
46.0 per cent	87	77	55	50	17
64.4 per cent	75	41	18	10	5
100.0 per cent	8	4	0.6	0.35	0.005

Compton tested the growth of several bacteria on subculture after contact with glycerin. It is of special interest to note the power of glycerin to deal with the streptococcus, an organism which is a comparatively early victim to the bactericidal action of glycerin. It is also important to note that long before this organism is killed its growth is markedly restrained.

TABLE 2.

Condensation of Compton's Tabulations

Organisms.	Hours	¼	½	1	4	6	8	12	15
B. Coli		+	+	+	+	+	+	+	—
Staphylococcus		+	+	+	+	+	+	+	—
Streptococcus (strain 1)		+	+	+	+	+	—	—	—
(strain 2)		+	+	+	+	—	—	—	—
Gonococcus		+	?	—	—	—	—	—	—

In addition to its osmotic and antiseptic actions glycerin has other noteworthy properties, when applied within the peritoneum. It stimulates an increase in the leukocytes and their protective localization within the abdomen. Deichmann,[2] working with white rats and white rabbits, and Tomkins,[12] using guinea pigs, came to the conclusion that intraperitoneal injections of glycerin resulted in considerable increase in the leukocytes, there being a slight increase in the monocytes and a marked increase in neutrophils. Glycerin is absorbed readily from the peritoneum and definitely inhibits the formation of acetone bodies and corrects hypoglycemia. Voegtlin, Dunn and Thompson[13] reported that the intraperitoneal injection of a 20 per cent solution of glycerin quickly banished the coma and convulsions induced in rats by a lethal dose of insulin. The same observers also noted the formation of glucose and the production of extensive and prolonged hyperglycemia in fasting rabbits after giving them the same solution orally or intraperitoneally. Glycerin inhibits the action of staphylococcic toxin in causing necrosis of the skin, an inhibition, according to M. L. Smith,[11] which is specific for this toxin. The protein-sparing action of glycerin and the mild diuretic effects following glycerin absorption also assist in the control of infection.

Reversal of lymphatic flow being the essential physiologic factor in drainage, any substance which evokes a flow of lymph is a drainage agent whether it functions by osmosis, as do hypertonic solutions, or by irritation, as do mechanical drains. Most purely mechanical drains provoke considerable tissue reaction, are rather promptly isolated as a foreign body and cease to perform their function. They tend to excite the formation of adhesions and occasionally cause intestinal obstruction. At best they are a necessary evil and there is a distinct trend to the less frequent employment of mechanical drains in abdominal infections. However, drains cannot altogether be dispensed with and we are in full agreement with Reid,[7] Lattanzio[5] and others in the advocacy of drainage in the presence of fecal contamination, devitalized infected tissue, or foul exudates asso-

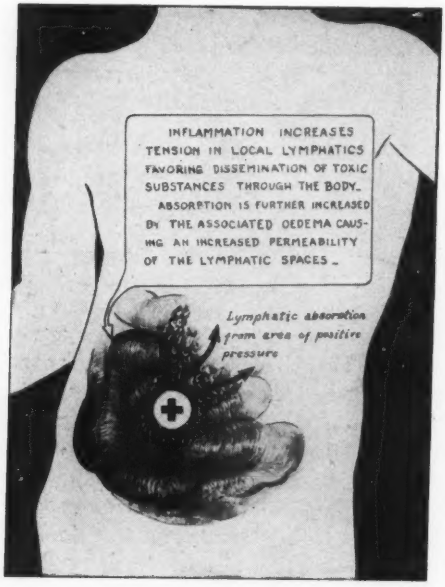

INFLAMMATION INCREASES TENSION IN LOCAL LYMPHATICS FAVORING DISSEMINATION OF TOXIC SUBSTANCES THROUGH THE BODY.
ABSORPTION IS FURTHER INCREASED BY THE ASSOCIATED OEDEMA CAUSING AN INCREASED PERMEABILITY OF THE LYMPHATIC SPACES.
Lymphatic absorption from area of positive pressure

Fig. 1

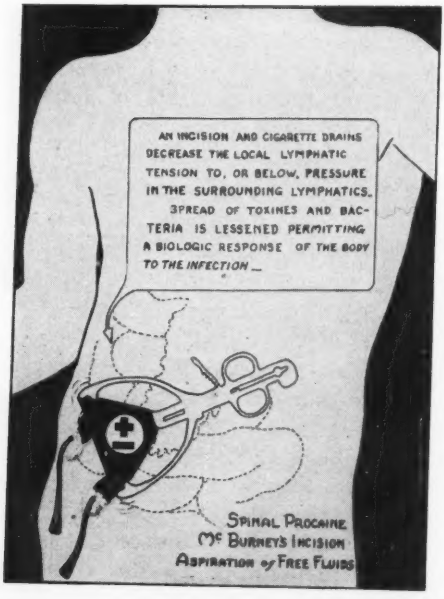

AN INCISION AND CIGARETTE DRAINS DECREASE THE LOCAL LYMPHATIC TENSION TO, OR BELOW, PRESSURE IN THE SURROUNDING LYMPHATICS.
SPREAD OF TOXINES AND BACTERIA IS LESSENED PERMITTING A BIOLOGIC RESPONSE OF THE BODY TO THE INFECTION.
SPINAL PROCAINE
Mc BURNEY'S INCISION
ASPIRATION of FREE FLUIDS

Fig. 2

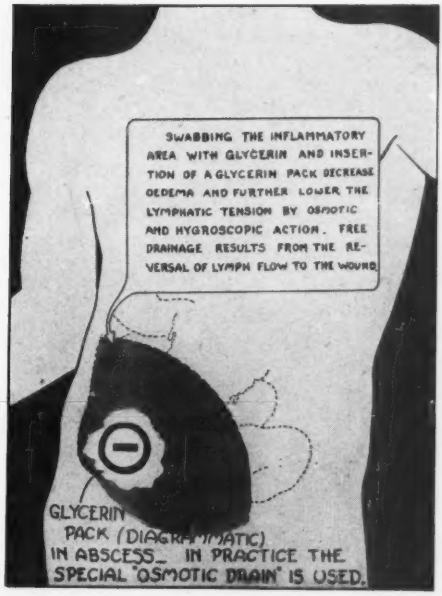


Fig. 3

ciated with anaerobic infections. The selection of a drain should take into consideration its effectiveness as a conduit for liquid discharges and also the degree of tissue reaction as indicated by the lymphatic flow. Rubber drains serve well as outlets for discharges but provoke only slight response in increased lymph flow. Dry gauze packs within the abdomen excite a pronounced flow of lymph as the result of nature's effort to extrude an irritating foreign substance. However, gauze has the disadvantage of becoming firmly fixed in the wound by the coagulation of lymph and the growth of granulation tissue into its meshes so that efforts to remove the gauze when its drainage function is completed result in troublesome bleeding, and to leave it in longer invites the formation of pus in the wound. Gauze, with maintained glycerin saturation, meets the requirements of the ideal drain since it promotes a free lymphorrhea, not only by foreign body stimulation but also through osmotic action, and in addition to establishing drainage it has the advantage of not adhering to delicate tissues and damaging them when it is removed, and through the antiseptic action of glycerin it inhibits rather than encourages infection by its presence. To meet the full requirements of an abdominal drain and to maintain a profuse discharge, we have devised a special type which consists of a Kehrer's cigaret drain within the central gauze core of which is placed an

18 F. catheter so that additional glycerin may be injected into the abdomen as needed.

The technic of intraperitoneal glycerin osmotherapy varies with the extent of the infection. With localized soiling, as from a gangrenous gallbladder or appendix, without wide diffusion of peritonitis, a glycerin swabbing of the contaminated area and the insertion of a Kehrer cigarette drain, the gauze of which has been

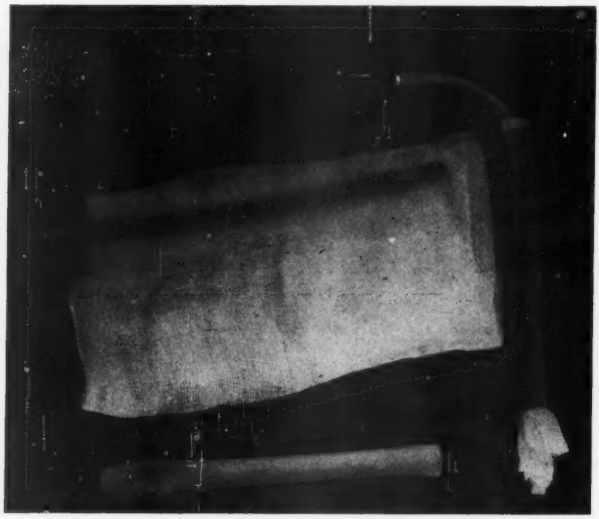


Fig. 4. Type of osmotic drain for use in abdomen. Essentially a Kehrer cigarette drain with a section of 18 F. catheter in core. The syringe is used to inject additional glycerin as indicated.

saturated with glycerin, is all that is needed. When one encounters diffuse peritonitis, with agglutination of intestinal loops and pocketing of pus, a more generous use of glycerin is indicated. The loops of intestines are gently separated to permit aspiration of pus collections and free laving with glycerin. As much as 8 ounces of autoclaved, U.S.P., glycerin is poured over the inflamed intestines and at least one osmotic drain is placed in the crater of the infection. Unlike normal peritoneum an edematous wound is not irritated by full strength glycerin since fluids extracted from the tissues seem to dilute the glycerin in contact with the serous membrane. The external portion of the drain is usually brought out through an accessory stab wound to reduce contamination of the operative incision. With an asepto syringe additional glycerin is injected through the catheter, for a few days, until the patient's temperature and pulse recede to safe levels, which usually occurs about the second or third

day. As inflammatory edema subsides, the injection of full strength glycerin may cause a stinging sensation which is an indication for reducing the concentration to about 60 per cent or discontinuing the injections.

Intraperitoneal glycerin osmotherapy seems to have peculiar merits which warrant its more general employment. It is advocated for use in conjunction with, and to supplement, procedures of established value in the treatment of peritonitis. Spinal anesthesia may be essential for the proper application of osmotherapy. Our only peritonitis death, which may be classed as a failure of osmotic drainage, followed an operation under ether anesthesia in which the patient's distended bowel and tense muscles prevented adequate application of the full technic. In patients with ruptured appendices and reasonable localization a muscle-splitting incision is used and the drain brought out through the operative incision. Aspiration of septic fluids and mopping out of contaminating fecal matter is done before pouring glycerin into the abdomen. An appendicecostomy may be life saving and nasal tube suction-decompression contributes to a smoother postoperative course. Parenteral sulfanilamide was used frequently, until quite recently, but we now feel that a combination of penicillin and streptomycin is more effective.

Following are a few abstracted case records to illustrate the possibilities of osmotherapy in patients desperately ill with diffuse peritonitis. These patients were all treated in the Owensboro-Daviess County Hospital.

Case Abstracts

Case 1. S. G. was admitted to Owensboro-Daviess County Hospital Mar. 17, 1946, after 2 days' treatment in the home for "renal colic." The abdomen was distended and tender throughout. No peristalsis was present.

White blood cells 24,400. Polymorphonuclears 91 per cent (segmenters 51, stabs 33, juveniles 6).

Operation showed a necrotic appendix, free fecal matter, marked agglutination of intestines. Appendectomy followed by appendicecostomy was done. Due to abdominal muscle rigidity, distended intestines and exudative gluing of bowel, attempts to instill glycerin in the abdomen were ineffective. This was the fatality referred to previously, death occurring on the ninth postoperative day.

There were two other deaths from peritonitis, during the period covered by this paper, neither of which was due to failure of osmotherapy. One, a man of 68, after exteriorization of a colon malignancy, on the third postoperative day, had necrosis from pressure of a clamp and the intestine withdrew into the abdomen. The other, a man of 74, had a cecal resection with iliotransverse colostomy and died on the eleventh day from pulmonary embolism.

CASE 2. W. J., a negro, aged 44, was admitted Sept. 25, 1944, after 5 days of ineffective efforts to relieve painful distended abdomen by purgatives and enemas. Examination revealed the abdomen to be markedly distended. No peristalsis was present.

White blood cells 3,700. Polymorphonuclears 62 per cent (segmenters 33, stabs 24, juveniles 5). The x-ray diagnosis was intestinal obstruction.

Operation showed marked intestinal distention with dense obstructing adhesions about the terminal ileum and a fibrous tumor mass (adenocarcinoma) involving the appendix. When the adhesions were separated, the ileum was torn and fully a quart of liquid feces poured out into the abdomen. The foul fluids were aspirated, the appendiceal tumor removed. An ileostomy was done. Perhaps a pint of glycerin was poured over the intestines and osmotic drains inserted.

His recovery required 3 weeks of hospitalization.

CASE 3. P. D., male, aged 20, was admitted on May 2, 1938, with a history of saline purgation and vomiting for 4 days. He was acutely ill. The abdomen was distended and tender.

Polymorphonuclears 89 per cent (segmenters 54, stab 27, juveniles 8). White blood cells 13,000.

On opening the abdomen there was a gush of foul fluid. The intestines were diffusely inflamed.

Intraperitoneal glycerin osmotherapy instituted.

His temperature had returned to normal by the fourth postoperative day.

CASE 4. Mrs. A. B. W., aged 28, was admitted Aug. 20, 1940, with a history of repeated lower abdominal flare-ups over a period of 3 years. Pain had been severe, her abdomen rigid below the umbilicus, and she had run a septic temperature. She claimed to have vomited everything swallowed for the preceding 3 weeks. She was extremely weak, toxic and dehydrated, with eyes sunken—altogether a most unpromising patient.

Although efforts were made to improve her condition preoperatively with parenteral fluids, transfusions, Wangensteen suction, etc., her temperature rose and vomiting persisted.

Dense adhesions were found and large abscesses evacuated in the region of the cecum, pelvis and left kidney fossa. A half pint of glycerin was poured into the abdomen and 2 osmotic drains placed in the abscess areas.

The following morning her temperature had dropped to normal from the preoperative reading of 103.6, indicating that her infection had been probably dominantly gonorrheal. She demanded food and begged cigarettes from me, the assistant and the anesthetist when we made rounds. She ceased vomiting and was quite comfortable after the second day.

CASE 5. R. T. S., aged 44, had had a diffuse appendiceal peritonitis, which was treated with osmotic drainage. A year later (Mar. 11, 1940) he was admitted, acidotic and dehydrated, complaining of intense pain in the region of his gallbladder, with associated rigidity and tenderness. He had vomited continuously for 2 days.

White blood cells 12,600. Polymorphonuclears 94 per cent (segmenters 42, stabs 47, juveniles 5).

When the omental adhesions were separated from the liver, pus and infected bile welled up from a ruptured gangrenous gallbladder, and there was rather extensive contamination. The gallbladder was removed by retrograde dissection, the contaminated areas were given a generous glycerin swabbing and a glycerined cigarette drain placed in the abscess pocket.

Under barbiturate confusion he got out of bed the second night and walked down the corridor. He suffered no ill effects from his unauthorized early ambulation and was dismissed on the thirteenth day with a sound wound.

CASE 6. C. E. W., aged 7, was admitted Feb. 3, 1940, with lobar pneumonia and diffuse peritonitis. Respirations 50 per minute, pulse 140. He was mildly cyanotic, dyspneic, and the face muscles were twitching. There was lung dullness. The abdomen was distended and tender throughout.

White blood cells 34,850. Polymorphonuclears 92 per cent (segmenters 40, stabs 50, juveniles 2).

His condition was definitely worse 5 hours after admission, with a temperature of 104 and pulse of 150. The case seemed hopeless, but the pitiful insistence of his mother, whose only other child had died of pneumonia 3 months before, influenced us to open the abdomen.

Under spinal anesthesia the abdomen was found full of frank pus with no evidence of walling off. A gangrenous appendix was removed and an appendicecostomy done. Several ounces of glycerin were poured over the intestines and an osmotic drain inserted.

The next night he was delirious, his twitchings became mildly convulsive, his temperature had risen to 107 by rectum, the pulse was 170 and respirations 65. The child seemed to be dying. In an effort to reduce the fever a cool enema was given and, since the water came out through the appendicecostomy tube a continuous flow of cool water was maintained all night. The next morning he was definitely better, was able to take a few sips of water and recognized his parents.

Four days later his rectal temperature was 102, his pulse 124 and his respirations 32. Since his abdomen was soft, comfortable, and peristaltic sounds normal, these elevated readings were attributed to his lung infection. The boy improved steadily and his temperature, pulse and respiration showed normal readings the eleventh postoperative day. He was able to leave the hospital 3 weeks after operation. This was the most desperately ill child I have ever seen recover.

SUMMARY

Laboratory investigation and clinical experience indicate that glycerin has several useful properties which make it suitable for intraperitoneal use in the treatment of acute diffuse secondary peritonitis.

1. By osmosis, glycerin induces drainage from infected tissues.

2. It has an extended antiseptic and an adequate bactericidal action on the etiologic bacteria of peritonitis in concentrations that do not prevent normal functional activity of body cells.

3. By limiting the extent, and shortening the duration, of infection it tends to restrict the formation of residual adhesions.

4. Glycerin absorbed from the peritoneum has a protein-sparing action, reduces hypoglycemia and prevents formation of acetone bodies.

5. It causes an increase in the number of leukocytes and their protective localization within the abdomen.

6. Used in conjunction with a mechanical drain it prevents the latter from adhering within the abdomen and avoids the skin maceration and superficial infection usually associated with prolonged pus drainage.

REFERENCES

1. Compton, A.: Intra-uterine Injection of Pure Glycerin, Lancet *211:*326-328 (Aug. 7) 1926.
2. Deichmann, W.: Glycerol: Effects upon Rabbits and Rats. Indust. Med., Indust. Hyg. Sect. *2:*5-6 (Jan.) 1941.
3. Fleming: Proc. Royal Soc. B *96:*171-180, 1924.
4. Hobbs, R.: Proc. Roy. Soc. Med. *17:*73-86; Brit. M. J. p. 1172, 1925.
5. Lattanzio, R.: An Experimental Contribution to the Treatment of Peritonitis, Internat. Abstr. Surg. *73:*433, 1941.
6. McClure, R. D., and Altemeier, W. A.: Acute Perforated Appendicitis, Ann. Surg. *105:*800-814 (May) 1937.
7. Reid, M. R., and Montanus, W.: Appendicitis: An Analysis of Cases at Cincinnati General Hospital, J.A.M.A. *114:*307, 1940.
8. Ruediger, E. H.: The Germicidal Power of Glycerin, Philippine J. Sc., 9B: 465-477 (Nov.) 1914.
9. Schrader, Quoted by Hertzler, A. E.: The Peritoneum, The C. V. Mosby Co., 1919.
10. Smith, E. D.: Glycerin Osmotic Drainage, Am. J. Surg. *50:*55-62 (Oct.) 1940.
11. Smith, M. L.: Influence of Glycerol on Skin Necrosis Produced by Staphylococcus Toxia, Brit. J. Exper. Path. *18:*265-268 (Aug.) 1937.
12. Tomkins: Effects of Glycerol on the Blood Picture, Am. Rev. Tuberc. *20:*908, 1929.
13. Voegtlin; Dunn, and Thompson: Effects of Glycerol on Action of Insulin etc. J. Pharmacol. & Exper. Therap. *25:*168, 1925.
14. Winslow, C. E. A., and Holland, D. F.: Disinfectant Action of Glycerol, Proc. Soc. Exp. Biol. & Med. *16:*90-92 (Feb.) 1918-19.

CHILD AND INFANT SURGERY

R. S. WIDMEYER, M.D., F.A.C.S.
Parkersburg, W. Va.

THIS paper is not a scientific discussion per se, but one that I hope will show the importance of the subject and the urgent need for more symposia on this subject. Indeed it is a plea for our medical and surgical societies and associations to organize a definite section on child and infant surgery in all their meetings.

For the past two years we have heard and read much about War Surgery in all its phases . . . yet before the War the child and infant with surgical conditions was pushed aside, as now, at all our meetings. Of course there is an occasional sporadic paper on the technic of an operation performed on a child or infant, and an occasional discourse on the therapy of some medical condition. But these sporadic papers are not enough for a so highly specialized subject. Much is to be learned by papers, round table discussions and symposia, and I would like to have this Surgical Congress take the lead in establishing such a section at all its meetings. It could be titled Pediatric Surgery or any other suitable name.

Child and infant surgical conditions may mimic every adult surgical condition, yet if one tried to treat these babies preoperatively, operatively and postoperatively as adults are treated, I am afraid the mortality rate would be very high. The surgeon dealing with an infant should have the help and cooperation of a competent pediatrician, as such intelligent help preoperatively and postoperatively may be the difference between success and failure for the operating surgeon. I have found it good policy to have the pediatrician consulted on the preoperative condition and have him prepare the infant by checking the fluid balance, the need for whole blood transfusions, sedation that the particular infant may take, type of anesthesia, etc. Postoperatively I prefer to have the pediatrician take over the feedings, but I think the operating surgeon should assume care of the wound and look for any postoperative complications or sequelae that may arise. So the role of the pediatrician in surgical cases of infants and children is most important and should be emphasized.

Diagnosis of surgical conditions in infants and children is most difficult. Patience and care of the surgeon in obtaining the history of the illness from the parents, careful attention to the referring pediatrician who has probably taken care of the infant since birth and knows much about the peculiarities and idiosyncrasies of the infant, careful and most complete examination and work-up, bimanual rectal examination, constitute the most important factors

in arriving at an accurate diagnosis. Blood studies and other laboratory procedures must always be done but can only be of definite assistance if they coincide with the surgeon's clinical findings. Most surgeons have had the experience many times of getting normal laboratory findings and yet clinically the infant or child has a surgical condition which is verified at operation. Then there will be occasions when the laboratory findings will be such that the surgeon will operate only to find no surgical condition at all. However, I believe that if one must err, let one err on the right side for the reason that it is far better to have removed a number of normal appendices in infants than to let one rupture with a resulting peritonitis. Some of the most common surgical conditions in infants and children may be classified as follows: (a) *Under two years of age*—pyloric stenosis, umbilical and inguinal hernia, acute appendicitis, intussusception, various orthopedic conditions, various anomalies of development as cleft palate, imperforate anus, atresia of intestinal tract, cervical adenitis and many others.

(b) *Over two years of age*—infected tonsils easily head the list; mastoid surgery has been practically eliminated by antibiotics, etc.; acute appendicitis, intestinal obstruction from various causes, traumatic conditions, orthopedic conditions, ovarian cysts, volvulus of the gut, mesenteric adenitis, intestinal infestation and many others occur in this age group.

Which surgical condition is the hardest to diagnose in infants and children? I believe that acute appendicitis easily heads this list. Pain and tenderness are unreliable in children, and muscle spasm is hard to differentiate in children due to lack of cooperation. Rectal and laboratory examination are of help and an increasing blood count may determine the time to operate. Mesenteric adenitis, enterocolitis and obstruction from any cause are apt to create the most confusion in diagnosis. Intussusception may be difficult. Pyloric stenosis can usually be diagnosed from history, palpation of a tumor mass, x-ray and the resistance to usual medical treatment. Experience of the surgeon with infants and children means much toward the conclusion of a correct diagnosis of the surgical condition.

Those of you who have been fortunate enough to do much child and infant surgery will concur with me that it teaches the surgeon much. The successful pediatric surgeon learns the most important technic first; namely, gentleness in handling all tissues. It immediately is apparent to the operator on a child or infant that these tissues are immature, tissue-paper like in consistency and must be handled with the utmost gentleness. This handling of tissues will be carried over into adult surgery, thus preventing much postoperative trauma and shock. Nerves, muscles, tendons, viscera and blood

vessels are all delicate replicas of the adult anatomy and must be handled accordingly. Anomalies of development should be looked for at every operation and the importance of careful dissection of tissues needs no comment.

Intestinal parasites in infants and children may cause or give rise to acute surgical conditions. It has been my experience in several cases diagnosed as an acute appendicitis or surgical abdomen to find free fluid in the belly cavity, an acutely inflamed appendix with a rather severe mesenteric adenitis throughout the area of the terminal ileum. There was little or no appreciable rise in eosinophiles, and yet the pathologist reported the presence of pinworms in the appendix in each case. So it *is* a fact that infants and children can have intestinal worms even though this is contrary to the belief of some pediatricians. Gentian violet given orally following the operation obtained excellent results in all cases. I wish to call your attention to this observation: that in all the cases of intestinal parasites found in acute surgical abdominal conditions, there has been present rather severe mesenteric adenitis in the area of the terminal ileum with a marked dull redness of the terminal ileum.

Do not confuse an acute enterocolitis with an acute surgical abdomen. Not only do you have the nausea, vomiting and abdominal cramps, but usually there is a severe diarrhea following the initial symptom pain. Laboratory findings usually are of great help in differentiating this condition.

I wish to call your attention to hypertrophic stenosis because it is a rather common surgical condition in infants. This condition usually occurs in the first 6 weeks of life, and usually is predominant in male infants, although I have had 3 females with this condition. An alert pediatrician will have tried all the medical tricks to reduce this obstruction at the pyloric end of the stomach before the surgeon is summoned. However, when you are called to see a patient with this condition and have made a correct diagnosis, it is well to have the fluid and chloride balance checked and be sure that your baby is not dehydrated beyond a safe surgical risk. Postoperatively be sure your sutures are well selected, well inserted and left long enough to insure good postoperative healing before removing.

Injuries are a separate entity in infants and children. The bite of a pet dog or cat, along with scratches of their claws, very often are treated too lightly. It is most wise to consider, and give if in doubt, rabies vaccine and tetanus antitoxin. If you have had the misfortune to see a baby die of tetanus or rabies, I am sure you would gladly treat them for any anaphylactic reaction either of these vaccines may cause.

Head injuries in children and infants, whether from direct or indirect violence, should always be treated with the utmost vigilance and careful observation. Remember suture lines in the skull of infants are easily separated and may be overlooked. X-ray all head injuries in infants and children, however slight, and observe for at least 24 hours. Note eye reactions, eyegrounds and movement of extremities.

Lacerations, regardless of location, should be carefully sutured at the time of injury. I believe it a good rule to give 1500 units of tetanus antitoxin no matter how the laceration may have been obtained. Anaphylactic reactions may be treated with elixir benadryl which gives prompt and permanent relief.

Birth injuries should be looked for and recognized by the attending obstetrician, and an orthopedic surgeon should be called early to correct this accident.

Intussusception may occur at any age, but up to 6 months or a year the condition should be investigated thoroughly at the time of reduction for the inclusion of the appendix which may have become gangrenous due to mechanical obstruction by the intussuscepting gut. When found, this is usually due to edema and strangulation of the blood supply to the appendix. When found the appendix should be removed. I have seen this condition 5 times in 23 years. Be sure the gut is viable after reducing the intussusception and that the mesenteric vessels can be seen and pulsations felt in the vessels before returning the dark gut to the belly cavity.

Volvulus of the bowel may be encountered and at operation it will be found that the infant or child has an anomalous formation of the bowel. Very often it is an abundant length of one portion of the bowel. Resection very often may have to be done.

The surgeon is often consulted by the parents to see whether they should have their children's tonsils and adenoids removed. If infection can be demonstrated, if widening of the nasal bridge is present, if the child is a mouth breather, I advise them to have a competent nose and throat surgeon remove the tonsils and adenoids regardless of age.

Circumcision is a matter of choice if the prepuce is not adherent or redundant.

Adenitis, whether chronic and painless, or acute and abscessed in any region, in a child or infant should be studied with meticulous care. The treatment is dependent on the cause of the swollen gland. Blood studies should be done to rule out the intermittent fevers and infectious mononucleosis, biopsy of the gland or removal of a gland and section should always be done where this condition is met.

Pyelitis, acute and chronic, may simulate surgical conditions in infants and children. Tenderness in the flanks should lead to investigation for renal disease and the presence of various renal tumors.

Suturing of wounds of infants and children should be done with the fact of early ambulation in mind, whether you are an advocate of early ambulation or not. For we all readily agree that it is next to impossible to keep an infant or child quiet or in bed postoperatively as we do adults. I believe that you will agree that these babies do much better postoperatively if they are allowed to be held by the mother and fed as soon after the operation as possible, for obvious reasons. I have often wondered if early ambulation postoperatively in adults was not the result of studying the baby postoperatively. Selection of suture materials is not discussed here.

Nursing care postoperatively is best in the hands of the mother or someone familiar to the baby or child. The pediatrician may render invaluable service in feeding, maintaining fluid balance and getting the baby back on a normal schedule. With the antibiotic drugs, we do not encounter many infections today as we have in the past, and dressing of the wounds postoperatively should be left to the surgeon at all times. I make it a rule to include my dressings in my stay sutures and tie them on, not dressing the wound for 6 days thereafter.

Anesthesia. In child and infant surgery perhaps the safest anesthetic is drop ether. There are many types of anesthetics and many ways to administer them, but I still prefer in infants and children the drop ether method.

I cannot emphasize the importance of the help of a competent pediatrician in the pre- and postoperative treatment of the infant and child in maintaining fluid balance, feedings and whole blood transfusions. Sedation and postoperative administration of antibiotics should be left to the judgment of the operating surgeon as well as the dressing and care of wounds.

Incisions are many, plain or fancy, easy or hard, according to the whim of the operating surgeon. In children and infants (and adults as well) in acute surgical abdomens, I believe it expedient to make the simplest incision, to get in and get out with the least possible amount of tissue handled. I make it a rule to make my incisions in these acute abdomens over the point of maximum tenderness and I map out carefully preoperatively this point of maximum tenderness and usually mark it on the belly wall. You will find the source of your surgical condition at this location and will find that it will make a much simpler operation for you.

Postoperative incarceration of bowel is a surgical condition which I term a surgical accident which, when recognized, demands immediate operation if the life of the patient is to be saved. There is little or nothing written about this condition and it was passed on to me by word of mouth while riding through Central Park in New York by Doctor Joseph E. J. King, who in turn had been *told* about it by Dr. William Haggard, of Tennessee. This was about 15 years ago, and during the interim years I have had occasion to see this condition three times and happily operated at once and all three patients got well. One other patient I reduced by succussion. This is what occurs, both in adults and infants: the abdomen is opened, the operative procedures accomplished, whatever they may be, the abdomen is closed in the usual manner tightly or it may be drained. Close observation of the patient by the surgeon is most important always as it is this close observation not only by the eyes but make it a rule postoperatively to lay your hand upon and feel the dressings on the abdominal wound, because it is this simple act that helps you diagnose the incarceration of the gut. The first postoperative day the patient shows a normal course in all directions, the wound dressings are dry, and I would have you note this fact well. The morning of the second postoperative day the patient has a slightly higher rise in temperature than normally expected, but the pulse is only slightly accelerated. However, the patient feels fine, but you will feel the dressings and they will be wet, and in looking around the hips of the patient in bed you will note a ring where some fluid has gotten on the sheets. You ask the patient if he has voided in bed or spilled anything and the answer is no. Remove the dressings and you can wring them out and obtain a colorless, watery solution with no odor. Examine the wound and it apparently is normal in every respect except that perhaps you may see a little tear or two in the suture line. Redress the wound and it is at this point that I manually try succussion. The third postoperative day temperature is 100 or thereabouts, the patient still tells you he feels fine, but the pulse is definitely accelerated. The dressings at this time will be soaked with a pale pink odorless solution, and a tell-tale ring of dried fluid around the buttocks of the patient on the sheets is noted. The dressings may be actually wrung dry of this solution at this time. Examination of the wound will reveal only a wet wound. Little or no distention is noted. It is at this time that the patient should be taken to the operating room and the wound reopened under anesthesia. In carefully reopening the wound you will find a portion of the fascia separated and a knuckle of gut incarcerated. If this is not seen at operation, look the small bowel over and you will find the tell-tale fibrinous ring around the knuckle

that was incarcerated. Drop it back into the abdomen and close the belly wound securely without drainage. The patient will make an uneventful recovery. If you do not reopen the belly wound at this time, you will note the next day a smart rise in temperature, restlessness of the patient, some pain, moderate distention, pulse fast and climbing, dressings colored with a definite red tint, and very wet, and the bed will be wet around the buttocks of the patient because the exudate from the incarcerated gut will be much increased. The fourth and fifth postoperative days will see the patient definitely in danger and stormy. When you finally do operate on the patient after the fourth or fifth day it is too late. These patients invariably die the evening of the fifth postoperative day unless this type of postoperative wound is reopened not later than the third postoperative day. This all may seem a little fantastic to you, but can you not look back and recall a patient or a few patients that you saw die, whose dressings for no apparent reason were saturated with this odorless pink fluid? And can you not recall that you just could not reasonably account for the patient's death because he felt and looked so good right up to the last day? The sad part of it all is that there has been little or nothing written in our literature about this condition. I hesitated to call your attention to it because there will be some of you that will think I am not well-balanced. But believe me that if you will put your hand on every postoperative wound every day and look, some time when you least expect it, you will see the above occur step by step as I have described it to you. Take it for what it's worth. I did, and it was worth the lives of exactly 4 patients who are still living. I can recall 2 patients very definitely, years ago . . . before I was informed by word of mouth that this condition did occur . . . who died of this condition and I always wondered why. Succussion of the patient is an heroic looking exercise and the nurses, patients and internes may think you have gone mad when they see you do it. You suspect the above condition exists the first postoperative day, so you actually straddle the patient, place your hands under the buttocks, raise the patient and drop him on the bed. This you repeat two or three times. If you have loosened the knuckle of gut and it has dropped back into the belly, the following day (remember to change the dressings before you do this) and every day thereafter the dressings will be dry and the patient will make an uneventful recovery. But you will never be able to convince the internes and nurses that anything was wrong in the first place.

I do not believe that I have digressed from the usual trend of this subject, because the last discussed condition may happen in infants and children as well as adults, and I wanted to pass this on

to this Congress in the hope that more men may recognize this condition and bring their experiences to the same Congress later on.

In conclusion, I wish you to note that there is no bibliography. I have not taken my remarks from any textbooks and have quoted no particular paper or surgeon except those to whom I have given credit throughout the paper. My remarks are original, and I wish to thank Doctor George N. Leonard, of Miami Beach, Florida, a fine pediatrician, for his helpfulness in discussing certain phases of this paper with me.

I hope that by bringing to your attention in a general way the surgical conditions of children and infants it may arouse you to demand that we have a SPECIAL SECTION on pediatric surgery in all its phases at all our meetings and it is my desire that this Southeastern Surgical Congress may take the initiative in including such a section in all its meetings. This subject has been too long neglected. We have sections on surgery of all ages except the child and infant. We are all cancer-conscious, but would not a section on child and infant surgery make us more cancer-conscious in these very young folks? Closer investigation and discussion of cancer in the infant and child may be the means of throwing some light on the cancer of adults.

By having a special section on this subject, anesthesia, suture materials, pre- and postoperative care may be discussed, as well as pathologic study of the surgical conditions found, and many more important factors may be understood which will go to make a better and more efficient surgical understanding of all child and infant surgical conditions.

I cannot conclude this paper without a few words on early ambulation. Earlier in this paper I have said that perhaps surgery of the child and infant has been the germ of early ambulation in adult surgery. But I wish to leave you with this thought: early ambulation is spectacular to the patient, to the family, the internes and the nurses . . . but has nature changed the time or manner in which tissues are healed? Suturing of the infant and child postoperative wound is done with the utmost care and precision to insure against dehiscence of the abdominal contents due to early activity of the baby and inability to keep the infant quiet by the usual sedation methods . . . but it still requires the same time for tissues to heal, regardless of the type of material used to suture the wound.

Let us all get together and have better and more complete surgical meetings by including a section on child and infant surgery . . . or as you wish, pediatric surgery.

1009 Market St.
Parkersburg, W. Va.

The Southern Surgeon

Published Monthly by
The SOUTHERN SURGEON PUBLISHING COMPANY
701 Hurt Building
ATLANTA 3

Subscription in the United States, $5.00

VOLUME XV JANUARY, 1949 NUMBER 1

DR. EPHRAIM McDOWELL

Inspiration and leadership was given to the surgeons of the world when Dr. Ephraim McDowell of Kentucky, in 1809, by his historic operation, laid the foundation for all abdominal surgery.

On Sunday, Christmas morning, Dr. Ephraim McDowell in the little pioneer town of Danville, Kentucky, operated on his patient, Mrs. Jane Todd Crawford, removing a large ovarian tumor. This was the first operation in the world of this kind, and placed Dr. McDowell and his patient in the front ranks of Americans to be praised and honored and glorified by all generations. At this time, Dr. McDowell was 38 years of age and Mrs. Crawford was 46.

Dr. McDowell was born and raised in Rockbridge County, Virginia, and received his medical education in Edinburgh, Scotland. Tradition says that he did not quite complete his course, most probably on account of lack of funds, and therefore did not receive his diploma; but this is doubted by some; and he did have a certificate of some kind, showing that he attended medical school there. His family background was of the best, and his education for that time was well above average. He was highly recommended by the leading professors of medicine of the University of Pennsylvania. His wife was the daughter of Isaac Shelby, the first governor of Ken-

tucky. Danville at that time was a backwoods country town, with mud roads and frame buildings. Dr. McDowell had a strong personality, and after his location, his reputation spread rapidly over the community and surrounding counties. He had done several operations in the way of removing external growths, tying blood vessels, and some amputations.

At this time, there lived on Blue Spring Branch of Caney Fork, nine miles from Greensburg, Kentucky, a family by the name of Crawford. They also came from Rockbridge County, Virginia, and emigrated through Cumberland Gap at Middlesboro, settling near Greensburg. Their home, their surroundings, in fact their whole life was a typical pioneer backwoods type,—a log cabin, with bare floors, not a single modern convenience, open fireplaces, most of the clothing and bedding made by hand. Jane Todd Crawford at this time was 46 years of age. She had four children. She had always enjoyed the best of health, but when she was about 45, she noticed that her "stomach," as she called it, was beginning to enlarge. This gradually increased, and became painful, and assumed enormous size, till it was difficult for her to walk around and do her work. The closest doctor was called, and after consultation with another doctor in the community, it was decided that she was pregnant, and that in all probability she could expect twins. After her appointed time passed, and there was no indication of relief, she and her husband began to be very uneasy. In a roundabout way, they had heard of the brilliant young doctor at Danville, and after consultation it was decided that he be called. After considerable delay, he came on horseback, riding through the wilderness, mostly on a creek bed for a road. He made a careful examination in the home, and told Mrs. Crawford that she was not pregnant, but that she had a large tumor, that unless it were removed, it would in all probability take her life. Mr. and Mrs. Crawford inquired how this could be done. Dr. McDowell said that medicine would not affect it, and there were no treatments of any form that offered relief. "But," he said, "I believe that I can remove it by cutting into the stomach by a surgical operation." In reply to their question if this had ever been done before, he said, "No, it is in the nature of an experiment, but I have all faith that it will be successful, and that it seems positive that unless this is done, the result will be fatal."

Naturally the effect of this revolutionary statement was very disquieting to the Crawfords, and so Dr. McDowell left without a positive answer.

As she rode over the rough road to Danville, on a side-saddle, the tumor extended out over the pommel of the saddle and rested

on the side of the horse. On her arrival in Danville, she rested for a few days, then on Christmas morning with no preliminary laboratory or x-ray tests, Dr. McDowell undertook the epoch-making operation.

DR. EPHRAIM McDOWELL

He had no trained assistant, etc.

No hospital
No morphine
No anesthetic
No trained nurse
No rubber gloves
No absorbable sutures
No operating table

The operation was completed in twenty-five minutes and the patient's condition is said to have been excellent. Silk sutures were left long, hanging outside the abdominal incision. This was for the purpose of drainage and early recognition of secondary hemorrhage.

A story very popular for several years, but now entirely discredited, was to the effect that a howling mob was outside the door, ready to mob Dr. McDowell in case the patient died during the operation.

Dr. McDowell was a gentlemanly cultured and devoutly religious man. The following prayer is authentic and was written out and was in his pocket at the time:

"Almighty God be with me, I humbly beseech Thee, in this attendance in Thy holy hour; give me becoming awe of Thy presence, grant me Thy direction and aid, I beseech Thee, that in confessing I may be humble and truly penitent in prayer, serious and devout in praises, grateful and sincere, and in hearing Thy word attentive, and willing and desirous to be instructed. Direct me, oh! God, in performing this operation, for I am but an instrument in Thy hands, and am but Thy servant, and if it is Thy will, oh! spare this poor afflicted woman. Oh! give me true faith in the atonement of Thy Son, Jesus Christ, and a love sufficient to procure Thy favor and blessing; that worshipping Thee in spirit and in truth my services may be accepted through His all-sufficient merit. Amen."

Probably no surgeon in our time actually has the prayer written out and in his own pocket, but I am sure I can say that most of us have a prayer in our hearts that our faith may endure and our skill be increased.

Jane Todd Crawford lived 32 years following the operation, and enjoyed perfect health during this time. The story is that Dr. McDowell did not render a bill, but that Mr. Crawford gave him one thousand dollars.

The family later removed to Indiana, and Mr. Crawford was accidentally killed. Mrs. Crawford's youngest son, Thomas Howell Crawford, was mayor of Louisville, and her oldest son was a prominent Presbyterian minister in the state of Indiana.

It was seven years before Dr. McDowell published the results of his operation, but when he did, he became world famous. In 1879 there was erected in his memory in the cemetery of Danville, a monument which was dedicated by Dr. Samuel D. Gross of Philadelphia, at that time the most prominent surgeon in the United States. A statue of Dr. McDowell also stands in the Capitol at Washington, D. C.

The house where McDowell lived, and where the operation was performed, was bought by the Kentucky Medical Association, and was dedicated and turned over to the state as a museum in May, 1938. As an officer of this body, I am proud to have had an active part in the raising of these funds and the dedication of the building. Surgeons from every state in the Union and from some South American countries contributed to this fund.

The biographers of Ephraim McDowell have stated that if man's usefulness is to be measured by his contributions to human welfare,

then the hero and the heroine of this story, Dr. Ephraim McDowell and Mrs. Jane Todd Crawford, should receive the truest devotion and the highest plaudits of the human race. It is fitting that their monuments should stand together in the same cemetery, for as each contributed to the success of the deed, so should their honor be united. Dr. McDowell possessed not only great courage and skill, but I believe truly exemplified the spirit of the medical profession.

Dr. McDowell's character and leadership have been an inspiration and a guide to surgeons the world over. The faith, the fortitude, and the Christian spirit of Jane Todd Crawford will continue to act as a guiding light, and to make easier the decision of women patients, to lengthen and to bless their lives throughout the ages.

J. B. LUKINS, M.D.

ROSTER

of

THE SOUTHEASTERN SURGICAL CONGRESS
AS OF DECEMBER 1, 1948

OFFICERS

DR. GILBERT DOUGLAS, *President*
Birmingham, Alabama

DR. R. B. MCKNIGHT, *Vice-President*
Charlotte, North Carolina

DR. R. J. WILKINSON, *President-Elect*
Huntington, West Virginia

DR. B. T. BEASLEY, *Secretary-Treasurer*
701 Hurt Building
Atlanta 3, Georgia

HONORARY FELLOWS

DR. W. WAYNE BABCOCK.....11 St. Asaples Rd., Bala, Pa.
DR. D. C. BALFOUR.....102 Second Ave., S.W., Rochester, Minn.
DR. VILRAY P. BLAIR.....508 N. Grand Blvd., St. Louis, Mo.
DR. JAMES R. BLOSS.....418 11th St., Huntington, W. Va.
DR. A. G. BRENIZER.....Charlotte, N. C.
DR. JOHN E. CANNADY...Charleston General Hospital, Charleston, W. Va.
DR. W. L. CHAMPION.....408 Doctors Bldg., Atlanta, Ga.
DR. J. F. ERDMANN.....122 E. 70th St., New York, N. Y.
DR. W. S. GOLDSMITH.....Stone Mountain, Ga.
DR. HENRY D. HATFIELD.....Guaranty Bank Bldg., Huntington, W. Va.
DR. R. S. HILL.....48 Gilmer Avenue, Montgomery, Ala.
DR. CHEVALIER JACKSON.....255 S. 17th St., Philadelphia, Pa.
DR. F. H. LAHEY.....605 Commonwealth Ave., Boston, Mass.
DR. RUDOLPH MATAS.....3523 Prytania St., New Orleans, La.
DR. J. F. MCCARTHY.....2 E. 54th St., New York City, N. Y.
DR. J. T. MOORE.....1215 Walter Avenue, Houston, Texas
DR. THOMAS W. MOORE.....First Nat'l Bank Bldg., Huntington, W. Va.
DR. J. J. MOORHEAD.....115 E. 64th St., New York City, N. Y.
DR. CHESTER R. OGDEN.....203 W. Main St., Clarksburg, W. Va.
DR. H. H. SHOULDERS.....508 Doctors Bldg., Nashville, Tenn.

ALABAMA

SENIOR FELLOWS

DR. NEAL L. ANDREWS.....2121 Highland Avenue, Birmingham
DR. REMBERT BAYNE.....116 Mabry St., Selma
DR. THOMAS S. BOOZER.....32 Clayton St., Montgomery

DR. JOHN L. BRANCH.....1215 Bell Bldg., Montgomery
DR. ROBERT M. BRANNON.....2121 Highland Avenue, Birmingham
DR. HUNTER M. BROWN.....1922 10th Avenue S., Birmingham
DR. E. V. CALDWELL.....604 Adams Avenue, Huntsville
DR. SAMUEL CAMPBELL.....233 La Prado Place, Birmingham
DR. JOHN L. CARMICHAEL.....2011 9th Avenue S., Birmingham
DR. B. M. CARRAWAY.....Norwood Clinic, Birmingham
DR. CHARLES N. CARRAWAY.....2501 16th Avenue N., Birmingham
DR. WILLIAM R. CARTER.....Repton
DR. ALBERT E. CASEY.....2236 Highland Avenue, Birmingham
DR. C. H. CHAPMAN.....Box 566, Andalusia
DR. SID W. COLLIER.....900 South 20th St., Birmingham
DR. C. J. COLQUITT.....306 Realty Bldg., Bessemer
DR. EDWARD T. COMER.....Eufaula
DR. H. EARLE CONWELL.....Medical Arts Bldg., Birmingham
DR. DAN J. COYLE.....825 Woodward Bldg., Birmingham
DR. FRENCH H. CRADDOCK.....Sylacauga
DR. FRENCH H. CRADDOCK, JR.....Sylacauga
DR. J. A. CUNNINGHAM.....Medical Arts Bldg., Birmingham
DR. M. Y. DABNEY.....2300 Highland Avenue, Birmingham
DR. EDGAR W. DAVIS....1150 Connecticut Ave. N.W., Washington, D. C.
DR. GILBERT F. DOUGLAS.....1111 S. 20th St., Birmingham
DR. JAMES DUBOIS.....Gibson Clinic, Enterprise
DR. WILLIAM E. EHLERT.....912 Dallas Avenue, Selma
DR. JOHN T. ELLIS.....814 South St. Andrews St., Dothan
DR. DREW FERGUSON.....Shawmut
DR. GILBERT E. FISHER.....501 Medical Arts Bldg., Birmingham
DR. C. H. FORD.....Medical Arts Bldg., Birmingham
DR. A. J. GAY.....Roanoke
DR. EDWARD L. GIBSON.....Enterprise
DR. ALBERT H. GREEN.....820 Woodward Bldg., Birmingham
DR. R. C. GREEN.....811 S. 20th St., Birmingham
DR. GILBERT B. GREENE.....513 Mabry St., Selma
DR. H. D. GREER.....Decatur Clinic, Decatur
DR. E. H. HARGIS.....1131 North 28th St., Birmingham
DR. W. F. HARPER.....P. O. Box 269, Selma
DR. WALTER G. HAYNES.....2020 Comer Bldg., Birmingham
DR. HILIARY H. HENDERSON, JR.....2160 Highland Ave., Birmingham
DR. ROBERT CHARLES HERMANN.....Marcus Skinner Clinic, Selma
DR. LUTHER L. HILL, II.....Hill Bldg., Montgomery
DR. ROBERT CARL HILL.....Hill Hospital, York
DR. A. F. HOLLEY.....P. O. Box 144, Brewton
DR. VICTOR T. HUDSON.....Van Antwerp Bldg., Mobile
DR. A. C. JACKSON.....Jasper
DR. B. FRANKLIN JACKSON, JR.....521 Forest Avenue, Montgomery
DR. HARRY LEE JACKSON.....Empire Bldg., Birmingham
DR. JOHN F. JENKINS, JR.....2300 Highland Avenue, Birmingham
DR. W. NICHOLSON JONES.....1927 First Avenue N., Birmingham
DR. J. S. JORDAN.....Woodlawn Medical Arts Bldg., Birmingham
DR. OTIS L. JORDAN.....503 Queen City Avenue, Tuscaloosa
DR. S. A. KAHN.....2160 Highland Avenue, Birmingham
DR. LELIAS E. KIRBY.....5357 N. First Ave., Birmingham
DR. JULIUS E. LINN.....301 Medical Arts Bldg., Birmingham

Dr. J. Otis Lisenby.....100 S. Church St., Atmore
Dr. Kenneth E. Luckie.....Swift Bldg., Selma
Dr. John A. Martin.....401 S. Court St., Montgomery
Dr. James M. Mason.....2721 Niazuma Ave., Birmingham
Dr. Theron K. McFatter.....1108 Laurel Avenue, Dothan
Dr. William R. Meeker.....42 Levert Ave., Mobile
Dr. Benjamin S. Meyer.....214 Medical Arts Bldg., Birmingham
Dr. George J. Mitchell.....461 Government St., Mobile
Dr. C. W. C. Moore.....125 North St., Talladega
Dr. J. O. Morgan.....American National Bank Bldg., Gadsden
Dr. S. O. Moseley.....431 Union St., Selma
Dr. Paul Nickerson.....917 Calhoun St., Sylacauga
Dr. Lloyd Noland.....Fairfield
Dr. James W. O'Dell.....8044 Second Avenue S., Birmingham
Dr. A. W. Ralls.....1136 6th Ave., Gadsden
Dr. J. U. Reaves.....303 Van Antwerp Bldg., Mobile
Dr. W. J. Rosser.....301 Medical Arts Bldg., Birmingham
Dr. C. L. Salter.....Talladega
Dr. P. P. Salter.....Eufaula
Dr. Paul W. Shannon.....820 Woodward Bldg., Birmingham
Dr. H. E. Simon.....2830 12th Avenue N., Birmingham
Dr. Marcus Skinner.....Marcus Skinner Clinic, Selma
Dr. William H. Spruell.....Russellville
Dr. Andrew L. Stabler.....2021 6th Ave. N., Birmingham
Dr. Selden H. Stephens.....436 First National Bank Bldg., Mobile
Dr. R. C. Stewart.....Sylacauga
Dr. John K. Taggart, Jr.....1100 7th Avenue, Jasper
Dr. S. R. Terhune.....818 Woodward Bldg., Birmingham
Dr. Francis M. Thigpen.....P. O. Box 1772, Montgomery
Dr. William G. Thuss.....2230 Third Ave., Birmingham
Dr. Lee F. Turlington.....1922 S. 10th Ave., Birmingham
Dr. S. S. Underwood.....514 Medical Arts Bldg., Birmingham
Dr. Samuel E. Upchurch.....2211 Highland Ave., Birmingham
Dr. Audis M. Walker.....2411 6th St. W., Tuscaloosa
Dr. James E. Walker.....119 South 8th St., Opelika
Dr. Jerre Watson.....121 E. 9th St., Anniston
Dr. Byrn Williamson.....2930 12th Avenue North, Birmingham
Dr. C. H. Wilson.....2144 Highland Avenue, Birmingham
Dr. Samuel W. Windham.....814 S. St. Andrews St., Dothan
Dr. Arthur A. Wood.....408 Van Antwerp Bldg., Mobile
Dr. Chestley L. Yelton.....T. C. I. Hospital, Fairfield
Dr. Stephen A. Zieman.....805 Government St., Mobile

Junior Fellow

Dr. Clarence L. Brook.....518 Bank Bldg., Tuscaloosa

FLORIDA

Senior Fellows

Dr. Powell Adams.....Panama City Hospital, Panama City

Dr. Ralph F. Allen.....1004 Huntington Bldg., Miami
Dr. A. M. Ames.....Blount Bldg., Pensacola
Dr. Edwin H. Andrews.....1135 W. University Ave., Gainesville
Dr. Paul F. Baranco.....206 Blount Building, Pensacola
Dr. T. H. Bates.....27 West Madison St., Lake City
Dr. Arthur R. Beyer.....405 Citizens Building, Tampa
Dr. William E. Bippus.....816 Comeau Bldg., West Palm Beach
Dr. M. Eldridge Black.....403 Coachman Bldg., Clearwater
Dr. John R. Boling.....1208 First National Bank Bldg., Tampa
Dr. Frederick H. Bowen.....2000 Park St., Jacksonville
Dr. Dorothy D. Brame.....1235 Kuhl Avenue, Orlando
Dr. James M. Bryant.....Park St., Jacksonville
Dr. Arthur J. Butt.....1101 N. Palafox St., Pensacola
Dr. Thomas C. Butt.....410 Florida Bank Bldg., Orlando
Dr. Milton N. Camp.....720 Sweet Bldg., Ft. Lauderdale
Dr. Edward Canipelli.....306 Professional Bldg., Jacksonville
Dr. L. F. Carlton.....Citizens Bank Bldg., Tampa
Dr. Russell B. Carson.....408 Sweet Bldg., Ft. Lauderdale
Dr. J. R. Chappell.....605 E. Marks St., Orlando
Dr. R. B. Chrisman, Jr.....743 DuPont Bldg., Miami
Dr. C. Frank Chunn.....442 W. Lafayette Ave., Tampa
Dr. Cleland D. Cochrane.....701 N. Peninsula Dr., Daytona Beach
Dr. Charles J. Collins.....1503 Kuhl Avenue, Orlando
Dr. George W. Croft.....111 W. Adams St., Jacksonville
Dr. E. W. Cullipher.....10 N. E. Third Avenue, Miami
Dr. Richard C. Cumming.....1232 E. Fifth St., Ocala
Dr. J. C. Davis.....Quincy
Dr. George M. Dawson.....209 Clarke Avenue, Palm Beach
Dr. Samuel Mason Day.....305 St. James Bldg., Jacksonville
Dr. Robert F. Dickey.....300 Aragon Avenue, Coral Gables
Dr. J. W. Douglas.....1101 North Palafox St., Pensacola
Dr. Russell V. Douglas.....320 N. Main St., Orlando
Dr. L. W. Dowlen.....802 Huntington Bldg., Miami
Dr. Peter A. Drohomer.....210 Volusia, Daytona Beach
Dr. James G. Economon.....108 East Central Ave., Orlando
Dr. Thomas M. Edwards.....706 Franklin St., Tampa
Dr. Oren A. Ellingson.....841 Bayshore Blvd., Tampa
Dr. Raymond L. Evans.....402 Huntington Bldg., Miami
Dr. Charles L. Farrington.....233 Fourth Ave. N.E., St. Petersburg
Dr. Luther C. Fisher, Jr.....816 Palafox St., Pensacola
Dr. Roland F. Fisher.....720 Sweet Bldg., Ft. Lauderdale
Dr. R. M. Fleming.....444 Ingraham Bldg., Miami
Dr. Samuel W. Fleming.....417 Harvey Bldg., West Palm Beach
Dr. William O. Fowler.....322 E. Central, Orlando
Dr. Stanley Frehling.....1503 DuPont Bldg., Miami
Dr. L. T. Furlow.....21 Fair Oaks, St. Louis, Mo.
Dr. Wade H. Garner.....308 S. Park Avenue, Sanford
Dr. R. A. Gowdy.....10845 Lindbroook Dr., Los Angeles, Calif.
Dr. F. D. Gray.....12 N. Rosalind Avenue, Orlando
Dr. John Dan Hagood.....710 S. Ft. Harrison Ave., Clearwater
Dr. Robert B. Harkness.....Lakeshore Hospital, Lake City
Dr. I. M. Hay.....Melbourne
Dr. John S. Helms, Jr.....LaFayette Arcade Office Bldg., Tampa

Dr. Robert P. Henderson.....544 N. Orange, Orlando
Dr. Frank B. Hodnette.....The Medical Center, Pensacola
Dr. Carl D. Hoffmann.....120 E. Robinson St., Orlando
Dr. H. G. Holland.....Leesburg
Dr. T. W. Hutson.....407 Ingraham Bldg., Miami
Dr. Ralph Willis Jack.....1700 Biscayne Blvd., Miami
Dr. Charles F. James, Jr.....Washington Square Bldg., Tallahassee
Dr. Edward Jelks.....2033 Riverside Ave., Jacksonville
Dr. Eugene L. Jewett.....502 E. Colonial Dr., Orlando
Dr. Walter C. Jones.....802 Huntington Bldg., Miami
Dr. F. H. Kauders.....720 DuPont Building, Miami
Dr. Sidney G. Kennedy, Jr.....816 N. Palafox, Pensacola
Dr. W. J. Lancaster.....1211 Citizens Bldg., Tampa
Dr. Francis H. Langley.....501 Times Bldg., St. Petersburg
Dr. Charles Larsen, Jr.....P. O. Box 1021, Lakeland
Dr. George D. Lilly.....333 Ingraham Bldg., Miami
Dr. M. A. Lischkoff.....404 Blount Bldg., Pensacola
Dr. A. H. Lisenby.....Panama City
Dr. L. U. Lumpkin.....800 N. Rio Vista Blvd., Ft. Lauderdale
Dr. J. G. Lyerly.....516 Greenleaf Bldg., Jacksonville
Dr. John E. Maines, Jr.....433 East Main North, Gainesville
Dr. Arthur L. Matthews.....220 Commercial Court Bldg., Sarasota
Dr. A. M. McCarthy.....210 Volusia Dr., Daytona Beach
Dr. Newton C. McCollough.....502 E. Colonial Dr., Orlando
Dr. Duncan McEwan.....108 E. Central Avenue, Orlando
Dr. Perry D. Melvin.....601 Huntington Bldg., Miami
Dr. Royston Miller.....902 East Colonial Dr., Orlando
Dr. John D. Milton.....1105 Huntington Bldg., Miami
Dr. William S. Mitchell.....1204 Kuhl Avenue, Orlando
Dr. Edward Mock.....24 West Chase St., Pensacola
Dr. Kenneth A. Morris.....238 W. Church St., Jacksonville
Dr. George W. Morse.....24 West Chase St., Pensacola
Dr. David R. Murphey, Jr.....442 W. Lafayette St., Tampa
Dr. Lloyd J. Netto.....319 Clematis St., West Palm Beach
Dr. Harold G. Nix.....442 W. LaFayette St., Tampa
Dr. L. M. Orr.....307 South Orange Avenue, Orlando
Dr. Richard Wynn S. Owen....524 Florida Power Bldg., St. Petersburg
Dr. W. Duncan Owens.....331 W. 47th St., Miami Beach
Dr. C. Panettiere.....1254 West Avenue, Miami Beach
Dr. Hugh E. Parsons.....442 West LaFayette St., Tampa
Dr. J. C. Pate.....First National Bank Bldg., Tampa
Dr. W. C. Payne.....Blount Bldg., Pensacola
Dr. Homer L. Pearson.....702 DuPont Bldg., Miami
Dr. E. G. Peek.....Box 475, Ocala
Dr. Joseph A. Pendino.....442 W. LaFayette St., Tampa
Dr. John R. Perdue.....327 Ingraham Bldg., Miami
Dr. C. L. Perry.....525 N. E. 15th St., Miami
Dr. J. H. Pound.....121 E. College Ave., Tallahassee
Dr. Jay A. Powell.....1410 S. Olive Ave., West Palm Beach
Dr. Raymond M. Price.....309 Blount Bldg., Fort Lauderdale
Dr. Frank Jones Pyle.....544 N. Orange Ave., Orlando
Dr. Shaler Richardson.....111 W. Adams St., Jacksonville
Dr. William C. Roberts.....348 Cove Blvd., Panama City

Dr. Don C. Robertson.....1202 Kuhl Ave., Orlando
Dr. L. F. Robinson.....720 Sweet Bldg., Ft. Lauderdale
Dr. L. M. Rozier.....411 Comeau Bldg., West Palm Beach
Dr. Lee Sharp.....24 W. Chase St., Pensacola
Dr. William M. Shedden.....Veterans' Adm. Hospital, Lake City
Dr. Donald W. Smith.....310 Ingraham Bldg., Miami
Dr. J. W. Snyder.....Huntington Building, Miami
Dr. B. B. Sory.....151 South County Rd., Palm Beach
Dr. James R. Sory.....535 S. Flagler Dr., West Palm Beach
Dr. Robert T. Spicer.....1110 Huntington Bldg., Miami
Dr. Joseph S. Stewart.....803 DuPont Bldg., Miami
Dr. W. D. Sugg.....Professional Bldg., Bradenton
Dr. Wilbur C. Sumner.....440 Riverside Dr., New York, N. Y.
Dr. Alva R. Taylor.....Blount Bldg., Ft. Lauderdale
Dr. William C. Thomas.....221 S. Arrendona St., Gainesville
Dr. G. C. Tillman.....401 Hamilton Crescent, Clearwater
Dr. M. H. Todd.....Veterans' Hospital, Coral Gables
Dr. John K. Turberville.....Century
Dr. Chambers M. Tyre.....200 Magnolia Ave., Eustis
Dr. Herbert W. Virgin.....903 Huntington Bldg., Miami
Dr. F. A. Vogt.....716 DuPont Bldg., Miami
Dr. F. J. Waas.....Professional Bldg., Jacksonville
Dr. Harrison A. Walker.....511 N. E. 15th St., Miami
Dr. R. H. Walker.....307 S. Orange Ave., Orlando
Dr. Edgar Watson.....Watson Clinic, Lakeland
Dr. Herman Watson.....P. O. Box 1021, Lakeland
Dr. Edward C. Watt.....419 Professional Bldg., Jacksonville
Dr. C. C. Webb.....24 West Chase St., Pensacola
Dr. Arthur H. Weiland.....Coral Gables Clinic, Coral Gables
Dr. J. Ralston Wells.....Veterans' Adm. Hospital, Dallas, Texas
Dr. Hugh West.....216 Dreka Bldg., DeLand
Dr. Courtland D. Whitaker.....200 Jefferson St., Marianna
Dr. H. E. White.....P. O. Box 606, St. Augustine
Dr. Ashbel C. Williams.....2033 Riverside Ave., Jacksonville
Dr. R. H. Williams.....129 Magnolia Ave., Eustis
Dr. C. C. Woods.....Veterans' Adm. Hospital, Bay Pines
Dr. Frank M. Woods.....601 Huntington Bldg., Miami

Junior Fellows

Dr. Taylor W. Griffin.....Masonic Bldg., Quincy
Dr. Francis T. Holland.....201 S. Monroe St., Tallahassee
Dr. Horace A. Knowlton.....706 Franklin, Tampa
Dr. Madison R. Pope.....101 West Reynolds St., Plant City
Dr. William D. Wells.....408 Sweet Bldg., Ft. Lauderdale

GEORGIA

Senior Fellows

Dr. Osler A. Abbott.....Emory University Hospital, Emory University
Dr. John B. Avera.....204 Dunwody Bldg., Brunswick

DR. J. MASON BAIRD.....511 Medical Arts Bldg., Atlanta
DR. L. G. BAGGETT.....Doctors Building, Atlanta
DR. JAMES M. BARNETT.....Eatman Building, Albany
DR. NEEDHAM B. BATEMAN, JR.....522 Candler Bldg., Atlanta
DR. W. W. BATTEY.....561 Telfair St., Augusta
DR. LEE H. BATTLE, JR.....West Building, Rome
DR. WILLIAM WARD BAXLEY.....719 Persons Bldg., Macon
DR. WALLACE L. BAZEMORE.....553 Walnut St., Macon
DR. DONALD E. BEARD.....490 Peachtree St., Atlanta
DR. B. T. BEASLEY.....701 Hurt Bldg., Atlanta
DR. W. O. BEDINGFIELD.....14 West Hull St., Savannah
DR. RUDOLPH BELL.....Upchurch Bldg., Thomasville
DR. RICHARD BINION.....P. O. Box 454, Milledgeville
DR. JOHN D. BLACKBURN.....Thomaston
DR. J. C. BLALOCK.....Medical Arts Bldg., Atlanta
DR. FRANK K. BOLAND.....Doctors Bldg., Atlanta
DR. FRANK K. BOLAND, JR.....Doctors Building, Atlanta
DR. JOSEPH H. BOLAND.....478 Peachtree St., Atlanta
DR. EDGAR BOLING.....478 Peachtree St., Atlanta
DR. RALPH O. BOWDEN.....24 W. Gaston St., Savannah
DR. MILTON B. BOWMAN, JR.....403 Broad St., Albany
DR. LESTER A. BROWN, JR.....478 Peachtree St., Atlanta
DR. RANDALL GAY BROWN.....P. O. Box 331, Swainsboro
DR. STEWART D. BROWN.....Royston
DR. STEPHEN T. BROWN.....Medical Arts Bldg., Atlanta
DR. WALTER E. BROWN.....14 West Hull St., Savannah
DR. B. RUSSELL BURKE.....1996 Ponce de Leon Ave., Atlanta
DR. J. K. BURNS.....Gainesville
DR. JAMES H. BYRAM.....508 Grand Theatre Bldg., Atlanta
DR. ENOCH CALLAWAY.....LaGrange
DR. JAMES LEROY CAMPBELL, JR.....103 W. Brookwood Dr., Valdosta
DR. GORDON CHASON.....Bainbridge
DR. J. R. CHILDS.....611 Medical Arts Bldg., Atlanta
DR. BEN H. CLIFTON.....478 Peachtree St., Atlanta
DR. HUGH COCHRAN.....244 Brighton Rd., Atlanta
DR. O. S. COFER.....478 Peachtree St., Atlanta
DR. G. N. COKER.....Canton
DR. BRASWELL E. COLLINS.....701 Elizabeth St., Waycross
DR. WILLIAM S. COOK.....238½ Pine Ave., Albany
DR. HERSCHEL C. CRAWFORD.....478 Peachtree St., Atlanta
DR. HORACE B. CUPP.....Lawson V A Hospital, Chamblee
DR. C. H. DANIEL.....801 W. Rugby, College Park
DR. WALTER W. DANIEL.....743 W. Peachtree St., N.E., Atlanta
DR. T. C. DAVISON.....478 Peachtree St., Atlanta
DR. S. C. DAVIS.....35 Linden Ave., Atlanta
DR. J. HARRIS DEW.....126 Forrest Ave., Atlanta
DR. HERMAN L. DISMUKE.....Ocilla Hospital, Ocilla
DR. JOHN B. DUNCAN.....Doctors Bldg., Atlanta
DR. LAURENCE B. DUNN.....114 Gaston St., East, Savannah
DR. W. B. DUVALL.....26 Linden Ave., Atlanta
DR. CHARLES A. EBERHART.....704 Piedmont Ave., Atlanta
DR. J. W. EDMONDSON.....Beeville, Texas
DR. CECIL B. ELLIOTT.....College St., Cedartown

DR. MONROE J. EPTING.....12 West Jones St., Savannah
DR. FRANK L. ESKRIDGE.....744 W. Peachtree St., Atlanta
DR. FRANK L. ESKRIDGE, JR.....744 West Peachtree St., Atlanta
DR. WILLIAM N. ETHERIDGE.....490 Peachtree St., Atlanta
DR. A. L. EVANS.....478 Peachtree St., Atlanta
DR. IRA A. FERGUSON.....478 Peachtree St., Atlanta
DR. DAVID B. FILLINGIM.....118 East Jones St., Savannah
DR. EDGAR F. FINCHER, JR.....Medical Arts Bldg., Atlanta
DR. T. J. FLOYD, JR.....232 West Taylor St., Griffin
DR. CHESTER A. FORT.....Medical Arts Bldg., Atlanta
DR. R. H. FOSTER.....Hotel Redmont, Birmingham, Ala.
DR. LOUIS MURRAY FREEDMAN.....1½ East Gordon St., Savannah
DR. GEORGE W. FULLER.....478 Peachtree St., Atlanta
DR. REGINA GABLER.....816 Grant Bldg., Atlanta
DR. JOHN P. GARNER.....East Atlanta Bank Bldg., Atlanta
DR. T. SCHLEY GATEWOOD.....205 S. Lee St., Americus
DR. J. G. GAY.....104 Ponce de Leon Ave., Atlanta
DR. OTIS D. GILLIAM.....308 Doctors' Bldg., Columbus
DR. WADLEY R. GLENN.....35 Linden Ave., Atlanta
DR. C. STEDMAN GLISSON, JR.....407 Medical Arts Bldg., Altanta
DR. THOMAS P. GOODWYN.....710 Doctors Bldg., Atlanta
DR. THOMAS W. GOODWIN.....1108 S. F. C. Bldg., Augusta
DR. ROBERT B. GOTTSCHALK.....123 E. Jones St., Savannah
DR. KENNETH D. GRACE.....116 Church St., LaGrange
DR. JAMES A. GREEN, JR.....390 N. Milledge Ave., Athens
DR. IRVING L. GREENBERG.....816 Grant Bldg., Atlanta
DR. EDGAR H. GREENE.....Doctors Bldg., Atlanta
DR. C. B. GREER.....Brunswick
DR. EDWARD W. GROVE.....Downey Hospital, Gainesville
DR. MURL M. HAGOOD.....Marietta Hospital, Marietta
DR. WILBUR D. HALL.....Calhoun
DR. WILLIAM G. HAMM.....Medical Arts Bldg., Atlanta
DR. B. HOLLIS HAND.....301 Church St., LaGrange
DR. LESTER HARBIN.....P. O. Box 631, Rome
DR. HERSCHEL HARRIS.....220 College Ave., Athens
DR. MILFORD B. HATCHER.....700 Spring St., Macon
DR. WILLIAM C. HATCHCOCK.....402 Grand Theatre Bldg., Atlanta
DR. EMERY C. HERMAN.....107 Broad St., LaGrange
DR. JOHN P. HITCHCOCK.....561 Telfair St., Augusta
DR. FRED B. HODGES, JR.....1115 Doctors Bldg., Atlanta
DR. FRANK P. HOLDER, JR.....Eastman
DR. W. R. HOLMES, JR.....Doctors Bldg., Atlanta
DR. C. F. HOLTON.....19 E. Gordon St., Savannah
DR. M. A. HUBERT.....Southern Mutual Bldg., Athens
DR. KENNETH S. HUNT.....319 S. 8th, Griffin
DR. CONWAY HUNTER.....770 Cypress St., Atlanta
DR. JOHN C. IVEY.....743 West Peachtree St., Atlanta
DR. ALFRED E. JAMES.....Medical Bldg., Albany
DR. DAN A. JARDINE.....Doctors Bldg., Douglas
DR. JAMES L. JENNINGS.....152 Forrest Ave., Atlanta
DR. RALPH N. JOHNSON.....Barron Bldg., Rome
DR. CHARLES S. JONES.....2853 North Hills Dr., Atlanta
DR. G. FRANK JONES, JR.....University Hospital, Augusta

Dr. Willis P. Jordan, Sr.....300 Martin Bldg., Columbus
Dr. William A. Kelley.....478 Peachtree St., Atlanta
Dr. John M. Kellum.....Community Bldg., Thomaston
Dr. Finley A. Kennedy.....1345 Greene St., Augusta
Dr. Lewell S. King.....912 North Main St., College Park
Dr. S. A. Kirkland.....Doctors Bldg., Atlanta
Dr. George H. Lang.....202 East Liberty, Savannah
Dr. O. D. Lennard.....Sandersville
Dr. William P. Leonard.....478 Peachtree St., Atlanta
Dr. Alva H. Letton.....478 Peachtree St., Atlanta
Dr. John R. Lewis, Jr.....Doctors' Bldg., Atlanta
Dr. Albert O. Linch.....943 Rosedale Rd., Atlanta
Dr. A. G. Little, Jr.....1306 N. Patterson St., Valdosta
Dr. Oscar H. Lott.....111 E. Jones St., Savannah
Dr. Robert C. Major.....University of Georgia, Augusta
Dr. J. D. Martin, Jr.....Emory University Hospital, Emory University
Dr. Charles P. Marvin.....1010 W. Peachtree St. N.E., Atlanta
Dr. O. H. Matthews.....736 Piedmont Ave., Atlanta
Dr. Thomas V. Matthews.....478 Peachtree St., Atlanta
Dr. Walter E. Matthews.....753 Broad St., Augusta
Dr. J. T. McCall.....310 S. Broad St., Rome
Dr. James G. McDaniel.....508 Grand Theatre Bldg., Atlanta
Dr. Harold P. McDonald.....804 Healey Bldg., Atlanta
Dr. W. L. McDougall.....915 Doctors Bldg., Atlanta
Dr. John M. McGehee.....Cedartown
Dr. H. M. McKemie.....301 Exchange Bank Bldg., Albany
Dr. Hal Miller.....478 Peachtree St., Atlanta
Dr. B. H. Minchew.....Waycross
Dr. Marvin A. Mitchell.....104 Ponce de Leon Ave., Atlanta
Dr. William C. Mitchell.....Smyrna
Dr. W. E. Mitchell.....Medical Arts Bldg., Atlanta
Dr. John Mooney, Jr.....Statesboro
Dr. Thomas H. Moss.....McCall Hospital, Rome
Dr. S. D. Murray.....Standard Bldg., Atlanta
Dr. Frank K. Neill.....Exchange Bank Bldg., Albany
Dr. R. G. Newton.....Persons Bldg., Macon
Dr. W. Perrin Nicolson, Jr.....Doctors' Bldg., Atlanta
Dr. Walter A. Norton.....105 East Oglethorpe, Savannah
Dr. Robert L. Oliver.....24 East Liberty St., Savannah
Dr. Buford L. O'Neal.....478 Peachtree St., Atlanta
Dr. John C. O'Neill.....202 E. Liberty St., Savannah
Dr. J. C. Patterson.....Cuthbert
Dr. A. M. Phillips.....1113 Bankers Insurance Bldg., Macon
Dr. John H. Pinholster.....241 Abercorn St., Savannah
Dr. James L. Pittman.....Doctors Bldg., Atlanta
Dr. D. Henry Poer.....Medical Arts Bldg., Atlanta
Dr. William L. Pomeroy.....901 Jane St., Waycross
Dr. Leon D. Porch.....Doctors Bldg., Macon
Dr. Charles L. Prince.....15 E. Gordon St., Savannah
Dr. Marion C. Pruitt.....403 Medical Arts Bldg., Atlanta
Dr. Julian K. Quattlebaum.....24 W. Gaston St., Savannah
Dr. W. E. Quillian.....986 Ponce de Leon Ave., Atlanta
Dr. Fred B. Ragland.....205 King St., Dalton

Dr. C. H. Richardson.....700 Spring St., Macon
Dr. Charles H. Richardson, Jr.....700 Spring St., Macon
Dr. Charles Rieser.....819 Cypress St., Atlanta
Dr. Wilford A. Risteen.....University Hospital, Augusta
Dr. Thomas G. Ritch.....Macon & Cherry St., Jesup
Dr. John H. Robinson, III.....205 S. Lee St., Americus
Dr. Phil E. Roberson.....242½ Broad Ave., Albany
Dr. Robert L. Rogers.....209 Jackson Bldg., Gainesville
Dr. Louis C. Rouglin.....1101 First National Bank Bldg., Atlanta
Dr. A. R. Rozar.....1309 Oglethorpe St., Macon
Dr. C. E. Rushin.....Doctors Bldg., Atlanta
Dr. Dan Y. Sage.....Medical Arts Bldg., Atlanta
Dr. A. S. Sanders.....118 Forrest Ave., Atlanta
Dr. J. Calvin Sandison.....Doctors Bldg., Atlanta
Dr. William B. Schaefer.....Toccoa
Dr. W. A. Selman.....157 Forrest Ave., Atlanta
Dr. James H. Semans.....34 Seventh St., Atlanta
Dr. Glenn E. Seymour.....Medical Bldg., Albany
Dr. B. L. Shackleford.....308 Medical Arts Bldg., Atlanta
Dr. Charles W. Smith.....57 Sixth St., Atlanta
Dr. Herschel A. Smith.....142 S. Jackson St., Americus
Dr. Robert H. Stephenson.....490 Peachtree St., Atlanta
Dr. Homer S. Swanson.....384 Peachtree St., Atlanta
Dr. Harry E. Talmadge.....Southern Mutual Bldg., Athens
Dr. Thomas B. Taylor.....Douglasville
Dr. Cleveland Thompson.....The Millen Hospital, Millen
Dr. D. N. Thompson.....49 College Ave., Elberton
Dr. John P. Tucker.....101 Donaldson St., Bainbridge
Dr. John W. Turner.....151 Ponce de Leon Ave., Atlanta
Dr. Wilborn E. Upchurch.....804 Healey Bldg., Atlanta
Dr. Abraham S. Velkoff.....490 Peachtree St., Atlanta
Dr. Exum Walker.....490 Peachtree St., Atlanta
Dr. Charley K. Wall.....Thomasville
Dr. Richard B. Weeks.....701 Southern Finance Building, Augusta
Dr. C. D. Whelchel.....Box 213, Gainesville
Dr. E. A. Wilcox.....2715 Bellevue Ave., Augusta
Dr. Charles R. Williams.....Wadley
Dr. W. J. Williams.....1503 S. F. C. Bldg., Augusta
Dr. C. E. Wills.....Washington
Dr. B. T. Wise.....Americus
Dr. W. Steve Worthy.....Boston, Mass.
Dr. E. S. Wright.....Medical Arts Bldg., Atlanta
Dr. Peter B. Wright.....University Hospital, Augusta
Dr. Jesse H. York.....Medical Arts Bldg., Atlanta

Junior Fellows

Dr. William H. Blanchard.....216 Highland, Cedartown
Dr. Samuel Y. Brown.....501 Doctors Bldg., Atlanta
Dr. Charles F. Cooper, Jr.....213 Persons Bldg., Macon
Dr. Robert W. Edenfield.....700 Spring St., Macon
Dr. James H. Hagan.....118 Cherry St., Rockmart
Dr. Sterling H. Jernigan.....57 Sixth St., Atlanta
Dr. Robert B. Martin, III.....Patterson Hospital, Cuthbert
Dr. Robert W. McAllister.....700 Spring St., Macon

Dr. John T. Persall, Jr.....302 Southern Finance Bldg., Augusta
Dr. Carl S. Pittman, Jr.....Bowen Bldg., Tifton
Dr. John E. Porter.....310 E. Jones St., Savannah
Dr. Charles L. Ridley, Jr.....Macon Hospital, Macon
Dr. Thomas A. Sappington.....The Clinic, Thomaston
Dr. R. M. Sealey.....308 Medical Arts Bldg., Atlanta
Dr. Henry E. Steadman.....Box 347, Hapeville
Dr. George N. Wagnon.....427 Moreland Ave., Atlanta

KENTUCKY

Senior Fellows

Dr. Irvin Abell.....321 West Broadway, Louisville
Dr. Irvin Abell, Jr.....1433 S. Third St., Louisville
Dr. William E. Akin, Jr.....Paintsville Hospital, Paintsville
Dr. E. S. Allen.....Francis Bldg., Louisville
Dr. G. G. Altman.....908 Brown Bldg., Louisville
Dr. I. A. Arnold.....Francis Building, Louisville
Dr. Henry B. Asman.....321 W. Broadway, Louisville
Dr. William B. Atkinson.....Lebanon
Dr. Benjamin F. Aydelotte.....624 Francis Bldg., Louisville
Dr. Jacob N. Bailey.....613 Citizens Bank Bldg., Paducah
Dr. Arthur B. Barrett.....200 N. Upper St., Lexington
Dr. John T. Bate.....301 W. Ormsby, Louisville
Dr. Branham B. Baughman.....401 W. Main St., Frankfort
Dr. Bernard J. Baute.....Lebanon
Dr. Henry I. Berman.....Veterans Adm. Center, Dayton, Ohio
Dr. William H. Bizot.....603 Fincastle Bldg., Louisville
Dr. J. H. Blackburn.....The Amory, Bowling Green
Dr. W. P. Blackburn.....226 St. Clair St., Frankfort
Dr. Winston N. Bloch.....522 W. Ormsby, Louisville
Dr. Thomas L. Boneta.....McCord Bldg., Richmond
Dr. William H. Bryant.....Glasgow
Dr. Maurice G. Buckles.....1 South Fourth St., Columbus, Ohio
Dr. Waller O. Bullock.....190 N. Upper St., Lexington
Dr. Joseph A. Burket.....332 W. Broadway, Louisville
Dr. Shelby G. Carr.....Richmond
Dr. W. O. Carson.....1133 State St., Bowling Green
Dr. Mischa Casper.....Starks Bldg., Louisville
Dr. Norvin L. Casper.....877 Starks Bldg., Louisville
Dr. B. Earl Caywood.....143 N. 4th St., Danville
Dr. Delmas M. Clardy..First City Bank & Trust Co., Bldg., Hopkinsville
Dr. William Duncan Crosby.....507 Heyburn Bldg., Louisville
Dr. David M. Cox.....102 Breckinridge Lane, Louisville
Dr. William J. Coyle.....Francis Building, Louisville
Dr. Wilford L. Cooper.....Lexington Clinic, Lexington
Dr. L. L. Cull.....Hume Building, Frankfort
Dr. Howell J. Davis.....103 W. 4th St., Owensboro
Dr. Melvin L. Dean.....288 S. Limestone St., Lexington
Dr. Paul Lawrence Dent.....Francis Building, Louisville
Dr. John Dickinson.....Yancey Building, Glasgow

DR. LESLIE C. DODSON.....103 W. 4th, Owensboro
DR. RICHARD E. DOUGHTY.....735 Starks Bldg., Louisville
DR. CHARLES M. EDELEN.....905 Brown Bldg., Louisville
DR. L. RAY ELLARS.....1110 Heyburn Bldg., Louisville
DR. RAYMOND MYERS EVANS.....615 Breslin Bldg., Louisville
DR. ORVILLE T. EVANS.....200 W. Second St., Lexington
DR. EARL J. EVERSOLE.....1200 South 6th St., Louisville
DR. MILTON D. FLANARY.....Pikeville
DR. JOHN B. FLOYD, JR.....Sharon Heights Hospital, Jenkins
DR. CLIFTON G. FOLLIS.....Public Square, Glasgow
DR. L. W. FRANK.....332 W. Broadway, Louisville
DR. J. M. FREHLING.....527 Fincastle Bldg., Louisville
DR. J. LUTHER FULLER.....1110 Francis Bldg., Louisville
DR. J. T. FULLER.....105 E. North St., Mayfield
DR. JOHN P. GLENN.....Fifth & Main Sts., Russellville
DR. G. Y. GRAVES.....1109 State St., Bowling Green
DR. ALLEN E. GRIMES.....200 West Second St., Lexington
DR. R. A. GRISWOLD.....804 Heyburn Bldg., Louisville
DR. D. P. HALL.....519 Heyburn Bldg., Louisville
DR. LYMAN S. HALL.....Taylor Building, Campbellsville
DR. PAUL B. HALL.....Paintsville
DR. J. D. HANCOCK.....516 Brown Bldg., Louisville
DR. FRED T. HARNED.....First City Bank Bldg., Hopkinsville
DR. JOHN S. HARTER.....1417 Heyburn Bldg., Louisville
DR. ELMER L. HENDERSON.....1110 Francis Bldg., Louisville
DR. LEON HIGDON.....333 Broadway, Paducah
DR. HAL E. HOUSTON.....North Fifth St., Murray
DR. C. C. HOWARD.....Times Building, Glasgow
DR. WALTER I. HUME.....901 Heyburn Bldg., Louisville
DR. E. W. JACKSON.....333 Broadway, Paducah
DR. VESTER A. JACKSON.....Clinton
DR. HARRY A. JAKEMAN....Stephens National Bank Bldg., Fremont, Nebr.
DR. CHARLES W. JEFFERSON.....622 Francis Bldg., Louisville
DR. FRANKLIN JELSMA.....421 Heyburn Bldg., Louisville
DR. HENRY V. JOHNSON.....125 S. Hamilton St., Georgetown
DR. WILLIAM O. JOHNSON.....605 Brown Bldg., Louisville
DR. COLEMAN C. JOHNSTON.....211 W. Second St., Lexington
DR. ROBERTSON O. JOPLIN.....805 Brown Bldg., Louisville
DR. OLIVER KELSALL.....722 Heyburn Bldg., Louisville
DR. ROBERT LICH, JR.....801 Heyburn Bldg., Louisville
DR. J. B. LUKINS.....656 Francis Bldg., Louisville
DR. LANIER LUKINS.....656 Francis Bldg., Louisville
DR. CHARLES HUGH MAGUIRE.....706 Heyburn Bldg., Louisville
DR. HERMAN MAHAFFEY.....430 Francis Bldg., Louisville
DR. HUGH MAHAFFEY.....North Second St., Richmond
DR. FRANCIS M. MASSIE.....190 N. Upper St., Lexington
DR. THOMAS H. MILTON.....Masonic Bldg., Owensboro
DR. CHAPMAN S. MOORMAN.....Brown Building, Louisville
DR. CLAY L. NICHOLS.....501 Francis Building, Louisville
DR. WALTER L. O'NAN.....237 First St., Henderson
DR. ALVIN B. ORTNER.....664 Francis Bldg., Louisville
DR. J. VERNON PACE.....203 Sycamore Dr., Paducah
DR. SAMUEL E. PARIS.....509 E. Main St., Bowling Green

Dr. Seymour George Pelzer.....1103 Maryland Ave., Bristol, Tenn.
Dr. William H. Pennington.....190 North Upper St., Lexington
Dr. George J. Petro.....877 Starks Bldg., Louisville
Dr. Carlisle R. Petty.....2406 Valley Vista Rd., Louisville
Dr. George E. Pryor.....Stamford Sanitarium, Stamford, Texas
Dr. M. H. Pulskamp.....401 Brown Bldg., Louisville
Dr. Fred W. Rankin.....410 Security Trust Bldg., Lexington
Dr. E. H. Ray.....203 W. Second St., Lexington
Dr. Samuel M. Rickman.....Bourbon Bank Bldg., Paris
Dr. Robert E. Reichert.....1080 Lawton Rd., Covington
Dr. Robert W. Robertson.....803 Citizens Savings Bank Bldg., Paducah
Dr. B. F. Robinson.....221 S. Hanover Ave., Lexington
Dr. Earl W. Roles.....411 Fincastle Bldg., Louisville
Dr. H. G. Saam, Jr.....804 Heyburn Bldg., Louisville
Dr. George B. Sanders.....1417 Heyburn Bldg., Louisville
Dr. William M. Savage.....16 East Third St., Maysville
Dr. Jamie P. Scott.....511 Second National Bank Bldg., Ashland
Dr. Charlie Patterson Shields.....Paducah
Dr. Gaithel L. Simpson.....South Main St., Greenville
Dr. E. Dargan Smith.....219 Masonic Bldg., Owensboro
Dr. Robert W. Smith.....227 St. Ann St., Owensboro
Dr. B. W. Smock.....519 Brown Bldg., Louisville
Dr. C. Dana Snyder.....223 Lyttle Blvd., Hazard
Dr. Clyde C. Sparks.....312 Mayo Arcade, Ashland
Dr. Harry Joseph Stone.....13th & Blackburn, Ashland
Dr. Harvey B. Stone.....1115½ S. Main, Hopkinsville
Dr. Wilbert M. Twyman.....1110 Heyburn Bldg., Louisville
Dr. Frank A. Vernon.....Pikeville Clinic, Pikeville
Dr. Herbert Wald.....552 Francis Bldg., Louisville
Dr. Burton A. Washburn.....Citizens Bank Bldg., Paducah
Dr. A. J. Whitehouse.....200 W. Second St., Lexington
Dr. George P. Whiteside.....Richardson Building, Glasgow
Dr. Karl D. Winter.....908 Heyburn Bldg., Louisville
Dr. Charles F. Wood.....706 Heyburn Bldg., Louisville
Dr. Charles R. Yancey.....1110 Main St., Hopkinsville

Junior Fellows

Dr. Guinn S. Cost.....1110 South Main, Hopkinsville
Dr. John E. Haynes.....Main & Ramsey, Dawson Springs
Dr. Robert C. Tate.....730 Francis Building, Louisville
Dr. Peter J. Trinca.....309 Main St., Fulton

LOUISIANA

Senior Fellows

Dr. Lucian W. Alexander....1230 Maison Blanche Bldg., New Orleans
Dr. Moss M. Bannermann.....1055 Convention St., Baton Rouge
Dr. William L. Bendel.....400 St. John St., Monroe
Dr. F. F. Boyce.....500 Audubon St., New Orleans

Dr. H. F. Brewster.....913 Union Bldg., New Orleans
Dr. Richard R. Brunazzi.....Smith Clinic, Texarkana, Texas
Dr. Edgar Burns.....3503 Prytania St., New Orleans
Dr. L. Sidney Charbonnet, Jr...706 Maison Blanche Bldg., New Orleans
Dr. Isidore Cohn.....1522 Aline St., New Orleans
Dr. Conrad G. Collins.....3503 Prytania St., New Orleans
Dr. Sidney M. Copeland.....1415 Delachaise St., New Orleans
Dr. Jay W. Cummins.....316 Catalpa St., Monroe
Dr. J. A. Danna.....Chaille Building, New Orleans
Dr. John W. Faulk.....Crowley
Dr. Isaac L. George.....705 Reymond Building, Baton Rouge
Dr. J. Q. Graves.....128 De Siard St., Monroe
Dr. Henry E. Guerriero, Sr.....319 Wood St., Monroe
Dr. A. Scott Hamilton.....419 Catalpa St., Monroe
Dr. H. H. Hardy, Jr.....531 DeSoto St., Alexandria
Dr. Charles V. Hatchette.....420 Pujo St., Lake Charles
Dr. Katharine Havard.....826 Bourbon St., New Orleans
Dr. R. Gordon Holcombe, Jr.....207 Foster St., Lake Charles
Dr. Robert P. Howell.....711 Bilbo St., Lake Charles
Dr. William K. Irwin.....805 North Boulevard, Baton Rouge
Dr. P. Jorda Kahle.....812 Pere Marquette Bldg., New Orleans
Dr. Wendell H. Kisner.....812 Hibernia Bank Bldg., New Orleans
Dr. Champ Lyons.....1430 Tulane Ave., New Orleans
Dr. Howard R. Mahorner.....810 Hibernia Bldg., New Orleans
Dr. T. Jeff McHugh.....705 New Reymond Bldg., Baton Rouge
Dr. Charles McVea.....Louisiana National Bank Bldg., Baton Rouge
Dr. John G. Menville.....Maison Blanche Bldg., New Orleans
Dr. Waldemar Metz.....Canal Bank Bldg., New Orleans
Dr. Marshall L. Michel, Jr.....1441 Delachaise St., New Orleans
Dr. Martin O. Miller.....912 Pere Marquette Bldg., New Orleans
Dr. Charles H. Mosely, Jr.....302 Reymond Bldg., Baton Rouge
Dr. Walter Moss.....220 Foster St., Lake Charles
Dr. Edward W. Nelson.....1407 S. Carrollton Ave., New Orleans
Dr. John F. Oakley.....1310 Canal Bldg., New Orleans
Dr. Alton Ochsner.....1430 Tulane Ave., New Orleans
Dr. Neal Owens.....200 Carondelet St., New Orleans
Dr. J. H. Pankey.....Ferriday
Dr. Frank W. Pickell.....Reymond Bldg., Baton Rouge
Dr. William A. Reed.....1202 Richards Bldg., New Orleans
Dr. O. C. Rigby.....Medical Arts Bldg., Shreveport
Dr. M. J. Rivenbark.....205 W. Main St., Haynesville
Dr. Peter B. Salatich.....1228 Maison Blanche Bldg., New Orleans
Dr. John T. Sanders.....4414 Magnolia St., New Orleans
Dr. John G. Snelling.....320 North Third St., Monroe
Dr. Leonard H. Stander.....701 N. Seventh St., Baton Rouge
Dr. Ambrose H. Storck.....1005 Richards Bldg., New Orleans
Dr. Lawrence H. Strug.....3439 Prytania St., New Orleans
Dr. George J. Taquino.....1313 Canal Bank Bldg., New Orleans
Dr. Henry M. Taylor.....405 N. Parkerson Ave., Crowley
Dr. Curtis H. Tyrone.....3503 Prytania St., New Orleans
Dr. W. A. Wagner.....American Bank Bldg., New Orleans
Dr. B. Bernard Weinstein.....1441 Delachaise St., New Orleans
Dr. Roy W. Wright.....Box 366, Winnfield

Junior Fellows

Dr. Orin R. Depp.....914 Canal Bldg., New Orleans
Dr. Ralph E. King.....Winnsboro

MISSISSIPPI

Senior Fellows

Dr. William H. Anderson.....114 Main St., Booneville
Dr. George F. Archer.....Medical Arts Bldg., Greenville
Dr. Otis H. Beck.....Greenville
Dr. E. E. Benoist.....Natchez
Dr. Maxwell D. Berman.....1011 N. Jefferson St., Jackson
Dr. J. A. K. Birchett, Jr.....Vicksburg Sanitarium, Vicksburg
Dr. T. H. Blake.....727 Carlisle St., Jackson
Dr. Eldon L. Bolton.....405 Lameuse St., Biloxi
Dr. W. H. Brandon.....150 Yazoo Ave., Clarksdale
Dr. Arthur E. Brown.....618 Main St., Columbus
Dr. Eugene A. Bush.....Box 567, Laurel
Dr. W. H. Cave.....208 Nebraska, Frankfort, Ill.
Dr. R. Lee Clark, Jr.....Jackson
Dr. John C. Culley.....Oxford
Dr. John P. Culpepper, Jr.....404 Ross Bldg., Hattiesburg
Dr. Gilruth Darrington.....Yazoo City
Dr. J. Gordon Dees.....733 North State St., Jackson
Dr. J. W. D. Dicks.....314 LaFayette Ave., Swathmore, Pa.
Dr. Francis S. Dixon.....Natchez Charity Hospital, Natchez
Dr. M. Q. Ewing.....Amory
Dr. Lucien C. Feemster.....428 West Main St., Tupelo
Dr. S. E. Field.....P. O. Box 128, Centreville
Dr. R. J. Field.....P. O. Box 128, Centreville
Dr. Ped L. Fite.....Columbus
Dr. M. L. Flynt.....312 WMOX Bldg., Meridian
Dr. M. L. Flynt, Jr.....WMOX Bldg., Meridian
Dr. Roger M. Flynt.....WMOX Bldg., Meridian
Dr. Hugh A. Gamble.....Medical Arts Bldg., Greenville
Dr. Richard F. Gates.....Kremer Building, Gulfport
Dr. D. J. Geraci.....Kremer Building, Gulfport
Dr. Archie E. Gordin.....121 N. President St., Jackson
Dr. James C. Green.....210 Main St., Tupelo
Dr. Toxey E. Hall.....Belzoni
Dr. William F. Hand.....521 Standard Life Bldg., Jackson
Dr. W. W. Hall.....307 West Sixth St., Reno, Nevada
Dr. Arthur V. Hays.....Box 1018, Gulfport
Dr. Archibald C. Hewes.....Hewes Building, Gulfport
Dr. Isaac C. Huggins.....910 N. State St., Jackson
Dr. Donald T. Imrie.....Street Clinic, Vicksburg
Dr. James H. Johnston, Jr.....727 Carlisle, Jackson
Dr. R. D. Kirk, Jr.....Tupelo
Dr. I. C. Knox.....1600 Monroe St., Vicksburg
Dr. Nathan B. Lewis.....303 First National Bank Bldg., Vicksburg
Dr. J. W. Lipscomb.....410 Lamar Life Bldg., Jackson

DR. LAWRENCE W. LONG.....412 Standard Life Bldg., Jackson
DR. GEORGE H. MARTIN.....Street Clinic, Vicksburg
DR. CUMMINGS H. MCCALL.....Hancock County Bank Bldg., Gulfport
DR. J. G. MCKINNON.....Vicksburg Clinic Hospital, Vicksburg
DR. MAURY H. MCRAE.....1207 Gloster St., Corinth
DR. JOSEPH M. MOORE.....Vicksburg Clinic, Vicksburg
DR. W. H. PARSONS.....Vicksburg
DR. V. B. PHILPOT.....Box 567, Holly Springs
DR. FRANK L. RAMSAY.....507 Sixth Avenue, Laurel
DR. RAY L. RHYMES.....1103 21st Ave., Meridian
DR. H. L. RUSH.....Rush's Infirmary, Meridian
DR. L. V. RUSH.....Meridian
DR. ROBERT E. SHANDS.....New Albany
DR. E. E. SHEELY.....201 Hewes Building, Gulfport
DR. OMAR SIMMONS.....Newton
DR. M. MURPH SNELLING.....Gulfport
DR. A. STREET.....Vicksburg
DR. G. M. STREET.....Street Clinic, Vicksburg
DR. W. H. SUTHERLAND.....Sutherland Clinic, Booneville
DR. EUGENE A. TRUDEAU.....Gay Building, Biloxi
DR. GEORGE E. TWENTE.....121 N. President, Jackson
DR. J. S. ULLMAN.....306 Franklin St., Natchez
DR. JAMES E. WADLINGTON.....950 North State St., Jackson
DR. M. BRISTER WARE.....512 Standard Life Bldg., Jackson
DR. FRANK E. WERKHEISER.....Standard Life Bldg., Jackson
DR. JOHN W. WILLIAMS.....110 N. Shelby, Greenville
DR. THOMAS WOLFORD.....1001 Main St., Columbus

JUNIOR FELLOWS

DR. CLAUDE G. CALLENDER.....727 Carlisle St., Jackson
DR. JOHN P. FATHERREE.....503 Sixth Avenue, Laurel
DR. FRANK O. SCHMIDT.....111 Washington Ave., Ocean Springs

NORTH CAROLINA

SENIOR FELLOWS

DR. NEWTON P. BATTLE.....Park View Hospital, Rocky Mount
DR. LAWRENCE L. BEALL.....Jefferson Standard Bldg., Greensboro
DR. ROWLAND T. BELLOWS.....Professional Bldg., Charlotte
DR. VERNE H. BLACKWELDER.....Blackwelder Hospital, Lenoir
DR. JOHN A. BRABSON.....412 N. Church St., Charlotte
DR. HOWARD H. BRADSHAW.....Wake Forest College, Winston-Salem
DR. H. L. BROCKMANN.....912 Fairway Dr., High Point
CAPT. J. S. BROWN, JR., MC, U.S.N...U.S.S. *Repose,* San Francisco, Calif.
DR. GEORGE L. CARRINGTON.....Burlington
DR. EDWIN J. CATHELL.....16 West First Ave., Lexington
DR. HAROLD S. CLARK.....29 N. Market St., Asheville
DR. D. B. COBB.....401 N. Herman St., Goldsboro
DR. ABNER M. CORNWELL.....419 South Aspen St., Lincolnton

Dr. L. A. Crowell.....Lincolnton
Dr. R. H. Crawford.....Rutherfordton
Dr. Glenn S. Edgerton.....403 N. Tryon St., Charlotte
Dr. John W. Farthing.....405 Murchison Bldg., Wilmington
Dr. Glenn R. Frye.....1416 Twelfth St., Hickory
Dr. J. S. Gaul.....316 Professional Bldg., Charlotte
Dr. T. V. Goode.....349 North Center St., Statesville
Dr. Charles P. Graham.....Masonic Temple Bldg., Wilmington
Dr. W. L. Grantham.....807 Public Service Bldg., Asheville
Dr. John W. Harbison.....314 South Washington St., Shelby
Dr. Parker C. Hardin.....1415 North Ave., Rockford, Ill.
Dr. Isaac E. Harris, Jr.....216 Trust Bldg., Durham
Dr. V. K. Hart.....106 W. Seventh St., Charlotte
Dr. Edward R. Hipp.....412 N. Church St., Charlotte
Dr. F. C. Hubbard.....North Wilkesboro
Dr. Thomas R. Huffines.....409 Flatiron Bldg., Asheville
Dr. Harry L. Johnson.....Hugh Chatham Memorial Hospital, Elkin
Dr. Frank W. Jones.....Catawba Hospital, Newton
Dr. Grace G. Jones.....1111 East Morehead St., Charlotte
Dr. George W. Joyner.....415 North Fayetteville St., Asheboro
Dr. William S. Justice.....New Medical Bldg., Asheville
Dr. J. P. Kennedy.....403 N. Tryon St., Charlotte
Dr. Floyd L. Knight.....2 Hillcrest Dr., Sanford
Dr. Donald B. Koonce.....Masonic Temple, Wilmington
Dr. Maurice LeBauer.....101 North Elm St., Greensboro
Dr. Claude M. Lee, Jr.....Norburn Hospital, Asheville
Dr. Thomas L. Lee.....1105 N. College St., Kinston
Dr. R. O. Lyday.....206 Jefferson Bldg., Greensboro
Dr. J. Kingsley MacDonald.....1524 Harding Place, Charlotte
Dr. Moir S. Martin.....Martin Memorial Hospital, Inc., Mount Airy
Dr. W. F. Martin.....Professional Bldg., Charlotte
Dr. Nathaniel H. Matros.....10 Vanderbilt Place, Asheville
Dr. Wm. B. McCutcheon.....Box 1166, Durham
Dr. Stephen McIntyre.....Fifth and Chestnut Sts., Lumberton
Dr. R. W. McKay.....121 West 7th, Charlotte
Dr. R. B. McKnight.....Professional Bldg., Charlotte
Dr. Oscar L. Miller.....121 West 7th St., Charlotte
Dr. Warren E. Miller.....Whiteville
Dr. Clement R. Monroe.....Moore County Hospital, Pinehurst
Dr. Lance T. Monroe.....206 Professional Bldg., Kannapolis
Dr. Julian A. Moore.....404 Flat Iron Bldg., Asheville
Dr. H. Stokes Munroe, Jr.....301 Professional Bldg., Charlotte
Dr. James D. Murphy.....VA Hospital, Oteen
Dr. J. Walter Neal, Jr.....309 Hillsboro St., Raleigh
Dr. C. S. Norburn.....346 Montford Ave., Asheville
Dr. William B. Norment.....301 North Elm St., Greensboro
Dr. H. H. Ogburn.....Jefferson Bldg., Greensboro
Dr. Zack Owens.....Medical Building, Elizabeth City
Dr. Yates S. Palmer.....Valdese General Hospital, Valdese
Dr. Edward W. Phifer.....206 N. Sterling St., Morganton
Dr. Wm. Reid Pitts.....1518 Harding Place, Charlotte
Dr. James G. Ramsey.....Tayloe Hospital, Washington
Dr. Edwin M. Robertson.....422 Trust Bldg., Durham

DR. J. F. ROBERTSON.....Masonic Temple Bldg., Wilmington
DR. PAUL W. SANGER.....1518 Harding Place, Charlotte
DR. H. MAX SCHIEBEL.....111 Corcoran St., Durham
DR. W. M. SCRUGGS.....301 Hawthorne Lane, Charlotte
DR. WILLIAM T. SHAVER.....Albemarle
DR. CHARLES H. SIKES.....324 Jefferson Bldg., Greensboro
DR. L. GORDON SINCLAIR.....336 Professional Bldg., Raleigh
DR. CLAUDE B. SQUIRES.....Professional Bldg., Charlotte
DR. C. V. TYNER.....Leaksville Hospital, Leaksville
DR. KENNON C. WALDEN..Atlantic Coast Line General Offices, Wilmington
DR. VERNON G. WATTERS, JR.....1627½ Elizabeth Ave., Charlotte
DR. BAHNSON WEATHERS.....Box 308, Roanoke Rapids
DR. MCCHORD WILLIAMS.....211 Hawthorne Lane, Charlotte
DR. FRANK WOOD.....Chowan Hospital, Edenton
DR. GEORGE T. WOOD.....Wachovia Bank Bldg., High Point

JUNIOR FELLOWS

DR. DENNIS B. FOX.....Yadkin Hospital, Albemarle
DR. MAX P. ROGERS.....649 N. Main St., High Point

SOUTH CAROLINA

SENIOR FELLOWS

DR. EDWARD ABLE.....1207½ Main St., Newberry
DR. A. E. BAKER.....Baker Sanatorium, Charleston
DR. C. RICHARD F. BAKER.....10 West Calhoun St., Sumter
DR. CHARLES O. BATES.....135 S. Main St., Greenville
DR. JAMES C. BELK.....118 E. Earle St., Anderson
DR. H. S. BLACK.....392 E. Main St., Spartanburg
DR. S. O. BLACK.....392 E. Main St., Spartanburg
DR. SAMUEL O. BLACK, JR.....Mary Black Hospital, Spartanburg
DR. HERBERT BLAKE.....Professional Bldg., Anderson
DR. LUTHER W. BOGGS.....222 N. Main St., Greenville
DR. T. E. BOWERS.....89 Rutledge Ave., Charleston
DR. CLYDE F. BOWIE.....627 N. Fant St., Anderson
DR. W. A. BOYD.....1524 Pickens St., Columbia
DR. A. J. BUIST, JR.....279 Meeting St., Charleston
DR. GEORGE H. BUNCH.....1404 Laurel St., Columbia
DR. A. F. BURNSIDE.....1512 Marion St., Columbia
DR. FRANCIS G. CAIN.....4 Vanderhorst St., Charleston
DR. WILLIAM C. CANTEY.....1412 Bull St., Columbia
DR. ROY L. CASHWELL.....300 S. Main St., Greenville
DR. JOHN H. CATHCART.....E. Frederick St., Gaffney
DR. EDWIN D. COCHRAN.....509 Andrews Bldg., Spartanburg
DR. WESTON COOK.....1528 Gervais St., Columbia
DR. WILLIAM M. CORBETT.....1515 Bull St., Columbia
DR. R. G. DOUGHTY.....1427 Pickens St., Columbia
DR. W. W. EDWARDS.....103 E. North St., Greenville
DR. DUBOSE EGLESTON, JR.....2129 Santee Ave., Columbia

Dr. Charles H. Epting.....1517 Hampton St., Columbia
Dr. Orion T. Finklea.....200 W. Evans St., Florence
Dr. Charles H. Fair.....Professional Bldg., Greenville
Dr. John D. Gilland, Jr.....1114 Third Ave., Conway
Dr. James T. Green.....1417 Hampton St., Columbia
Dr. James C. Hall.....Gaffney
Dr. Walter D. Hastings, Jr.....230 Montgomery Bldg., Spartanburg
Dr. Erwin O. Hentz.....105 Calhoun St., Anderson
Dr. William C. Herbert, Jr.....327 Kennedy St., Spartanburg
Dr. Ragsdale Hewitt.....201 N. Washington St., Sumter
Dr. G. B. Hodge.....230 Montgomery Bldg., Spartanburg
Dr. Frank A. Hoshall.....95 Rutledge Ave., Charleston
Dr. P. G. Jenkins.....155 Wentworth St., Charleston
Dr. Clarence A. Kinney.....111 West Cheves St., Florence
Dr. Frederick E. Kredel.....Medical College, Charleston
Dr. C. J. Lemmon.....132 North Washington St., Sumter
Dr. Charles J. Lemmon, Jr.....1421 Bull St., Columbia
Dr. D. L. Maguire.....189 Calhoun St., Charleston
Dr. Daniel L. Maguire, Jr.....189 Calhoun St., Charleston
Dr. John W. Martin.....126 E. Earle St., Anderson
Dr. Lawrence H. McCalla.....Professional Bldg., Greenville
Dr. George T. McCutchen.....1412 Bull St., Columbia
Dr. Lee W. Milford, Sr.....Clemson College Hospital, Clemson
Dr. C. A. Mobley.....31 Glover St., Orangeburg
Dr. A. T. Moore.....Gervais & Pickens Sts., Columbia
Dr. Mordecai Nachman.....107 E. North St., Greenville
Dr. Jack D. Parker.....206 E. North St., Greenville
Dr. V. P. Patterson.....Pryor Hospital, Chester
Dr. George T. Peel.....118 East Earle St., Anderson
Dr. Claud Walter Perry.....126 E. Earle St., Anderson
Dr. J. J. Ravenel.....96 Ashley Ave., Charleston
Dr. Delmar O. Rhame, Jr.....Hays Hospital, Clinton
Dr. J. S. Rhame.....81 Wentworth St., Charleston
Dr. George S. Rhame.....Camden
Dr. James A. Sasser.....Conway
Dr. Asa M. Scarborough.....Woodside Bldg., Greenville
Dr. Leopold A. Schneider.....3 S. Cambridge St., Ninety Six
Dr. C. J. Scurry.....431 Main St., Greenwood
Dr. S. B. Sherard.....Gaffney
Dr. Keitt H. Smith.....201 E. North St., Greenville
Dr. George V. Rosenberg.....Public Square, Abbeville
Dr. Lewis H. Taylor, Jr.....300 S. Main St., Greenville
Dr. L. P. Thackston.....47 Carolina Ave., Orangeburg
Dr. W. P. Turner.....310 Maxwell Ave., Greenwood
Dr. William P. Turner, Jr.....Hodges Building, Greenwood
Dr. Furman T. Wallace.....714 Andrews Bldg., Spartanburg
Dr. Jeff N. Webb.....Seneca
Dr. Andrew B. Whitaker.....Camden
Dr. J. Warren White.....206 E. North St., Greenville
Dr. David A. Wilson.....209 E. Coffee St., Greenville
Dr. James M. Wilson.....145 Rutledge Ave., Charleston
Dr. Charles N. Wyatt.....301 E. Coffee St., Greenville
Dr. J. R. Young.....126 E. Earle St., Anderson

Junior Fellows

Dr. William C. Bolt.....118 E. Earle St., Anderson
Dr. John D. Harrison.....204 Hodges Bldg., Greenwood
Dr. Willis A. Melcher.....Iva
Dr. Jennings Owens, Jr.....Bennettsville
Dr. John C. Scurry.....Scurry Clinic, Greenwood
Dr. Ralph B. Scurry.....Scurry Clinic, Greenwood
Dr. James H. Young.....25 Thomas Road, Wellesley, Mass.

TENNESSEE

Senior Fellows

Dr. Herbert Acuff.....514 West Church Ave., Knoxville
Dr. William M. Adams.....902 Madison Ave., Memphis
Dr. Chester D. Allen.....1019 Madison Ave., Memphis
Dr. J. Sumpter Anderson.....Bennie Dillon Bldg., Nashville
Dr. Charles G. Andrews.....899 Madison Ave., Memphis
Dr. J. Malcolm Aste.....265 South Bellevue, Memphis
Dr. Troy P. Bagwell.....807 Medical Arts Bldg., Knoxville
Dr. Robert H. Baker.....609 West Main Ave., Knoxville
Dr. L. D. Bennett.....200 Doctors Bldg., Nashville
Dr. James D. Biles, Jr.....899 Madison Ave., Memphis
Dr. William T. Black, Jr.....899 Madison Ave., Memphis
Dr. Robert F. Bonner.....1000 Madison Ave., Memphis
Dr. Thomas L. Bowman.....806 Cumberland St., Harriman
Dr. Carey G. Bringle.....188 S. Bellevue, Memphis
Dr. James M. Brockman.....188 S. Bellevue, Memphis
Dr. George H. Burkle.....39 South Cleveland, Memphis
Dr. H. A. Callaway.....Maryville
Dr. Earl R. Campbell.....525 McCallie Ave., Chattanooga
Dr. Louis L. Carter.....188 S. Bellevue, Memphis
Dr. John H. Chandler.....420 E. Main St., Jackson
Dr. C. L. Chumley.....603 W. Main Ave., Knoxville
Dr. Edward S. Clayton.....607 W. Main Ave., Knoxville
Dr. Hubert P. Clemmer.....507 Highland Ave., Milan
Dr. Joseph D. Cleveland.....899 Madison Ave., Memphis
Dr. E. D. Connell.....899 Madison Ave., Memphis
Dr. L. E. Coolidge.....Greenville
Dr. Giles A. Coors.....1304 Union Ave., Memphis
Dr. Kyle C. Copenhaver.....514 W. Church Ave., Knoxville
Dr. Nat H. Copenhaver.....5½ Fifth St., Bristol
Dr. Theodore W. Davis.....301 Jackson Bldg., Nashville
Dr. Sheldon E. Domm.....Medical Arts Bldg., Knoxville
Dr. Earl R. Donathan.....1004 Medical Arts Bldg., Knoxville
Dr. J. M. Dorris.....899 Madison Ave., Memphis
Dr. John H. Dougherty.....514 W. Cumberland Ave., Knoxville
Dr. Horton G. DuBard.....2541 Broad, Memphis
Dr. Leonard W. Edwards.....2001 Hayes St., Nashville
Dr. James B. Ely.....514 West Church St., Knoxville
Dr. James R. Fancher.....817 Provident Bldg., Chattanooga

Dr. Turley Farrar.....899 Madison Ave., Memphis
Dr. Ray O. Fessey.....2413 West End Ave., Nashville
Dr. Roy A. Fisher, Jr.....603 W. Main, Knoxville
Dr. Carey O. Foree.....Foree Hospital, Athens
Dr. William E. Foree.....Foree Hospital, Athens
Dr. Haskell W. Fox.....Greeneville Hospital, Greeneville
Dr. Joseph H. Francis.....188 S. Bellevue, Memphis
Dr. C. W. Friberg.....605 Hamilton Bank Bldg., Johnson City
Dr. J. C. Gardner.....429 Doctors Bldg., Nashville
Dr. Joseph A. Gardner, Jr.....1000 Madison Ave., Memphis
Dr. Lee K. Gibson.....200 E. Main St., Johnson City
Dr. Clarence E. Gillespie.....22 North Manassas, Memphis
Dr. Jack Greenfield.....Kennedy VA Hospital, Memphis
Dr. Charles S. Gresham.....505 Hamilton Bank Bldg., Johnson City
Dr. V. H. Griffin.....Masonic Building, Clarksburg
Dr. Albert J. Grobmyer, Jr.....130 Madison Ave., Memphis
Dr. J. B. Haskins.....611 Medical Arts Bldg., Chattanooga
Dr. L. Eugene Haun.....901 Medical Arts Bldg., Knoxville
Dr. Louis A. Haun.....901 Medical Arts Bldg., Knoxville
Dr. M. Lou Hefley.....604 West Main Ave., Knoxville
Dr. A. L. Herring.....899 Madison Ave., Memphis
Dr. George B. Higley.....923 Madison Ave., Memphis
Dr. Victor Hill.....209 Doctors Bldg., Knoxville
Dr. Michael W. Holehan.....899 Madison Ave., Memphis
Dr. G. Turner Howard, Jr.....506 Medical Arts Bldg., Knoxville
Dr. Moses W. Howard.....407 Medical Arts Bldg., Knoxville
Dr. G. B. Hubbard.....426 E. Main St., Jackson
Dr. Charles Ingle.....938 Rozelle St., Memphis
Dr. Carmen E. James.....188 S. Bellevue, Memphis
Dr. Ernest G. Kelly.....899 Madison Ave., Memphis
Dr. Webb B. Key.....265 S. Bellevue, Memphis
Dr. John J. Killeffer.....546 McCallie Ave., Chattanooga
Dr. Louis A. Killeffer.....417½ Roane St., Harriman
Dr. Robert A. Knight.....869 Madison Ave., Memphis
Dr. Hiram A. Laws, Jr.....616 James Bldg., Chattanooga
Dr. Chester B. LeQuire.....205 Blount National Bank Bldg., Maryville
Dr. John H. Lesher.....603 W. Main Ave., Knoxville
Dr. James D. Lester.....826 Bennie-Dillon Bldg., Nashville
Dr. Charles K. Lewis.....Sterick Bldg., Memphis
Dr. Edwin J. Lipscomb.....188 S. Bellevue, Memphis
Dr. Marion S. Lombard.....Memphis
Dr. Carroll H. Long.....Hamilton Bank Bldg., Johnson City
Dr. Battle Malone II.....188 S. Bellevue, Memphis
Dr. Travis H. Martin.....Bennie-Dillon Bldg., Nashville
Dr. Alfred D. Mason, Jr.....33 S. Claybrook St., Memphis
Dr. William P. Maury, Jr.....1053 Madison Ave., Memphis
Dr. Raymond F. Mayer.....899 Madison Ave., Memphis
Dr. Robert L. McCracken.....610 Doctors Bldg., Nashville
Dr. J. Lucius McGehee.....899 Madison Ave., Memphis
Dr. Thomas P. McKee.....207 Watauga Ave., Johnson City
Dr. Eugene McKenzie.....188 S. Bellevue, Memphis
Dr. Carl S. McMurray.....316 Doctors Bldg., Nashville
Dr. T. T. McNeer.....519 Holston St., Kingsport

DR. R. L. MCREYNOLDS.....802 Medical Arts Bldg., Knoxville
DR. BARTON MCSWAIN.....Vanderbilt School of Medicine, Nashville
DR. WILLIAM F. MEACHAM.....2122 W. End Ave., Nashville
DR. HARRY D. MILLER.....236 E. Market St., Johnson City
DR. FRANK L. MILLIGAN.....Jefferson & George, Jefferson City
DR. E. D. MITCHELL, JR.....1005 Com. Title Bldg., Memphis
DR. MOORE MOORE, JR.....188 S. Bellevue, Memphis
DR. T. D. MOORE.....899 Madison Ave., Memphis
DR. JOEL C. MORRIS.....2045 N. Broadway, Knoxville
DR. J. G. MOSS.....216½ E. Main St., Johnson City
DR. FRANCIS MURPHEY.....899 Madison Ave., Memphis
DR. LUKE W. NABERS.....533 West Main St., Morristown
DR. DANA W. NANCE.....Oak Ridge Hospital, Oak Ridge
DR. E. T. NEWELL.....707 Walnut St., Chattanooga
DR. E. PARK NICELEY.....514 West Church Ave., Knoxville
DR. CHARLES B. OLIM.....899 Madison Ave., Memphis
DR. BEDFORD T. OTEY.....1079 Madison Ave., Memphis
DR. HERSCHEL PENN.....1831 W. Clinch Ave., Knoxville
DR. JARRELL PENN.....1831 W. Clinch Ave., Knoxville
DR. H. DEWEY PETERS.....Medical Arts Bldg., Knoxville
DR. ARTHUR R. PORTER, JR.....248 Madison Ave., Memphis
DR. R. M. POOL.....180 N. Willett St., Memphis
DR. C. H. PORTER.....899 Madison Ave., Memphis
DR. ROBERT RASKIND.....899 Madison Ave., Memphis
DR. R. BEVERLEY RAY.....923 Madison Ave., Memphis
DR. THOMAS R. RAY.....203 Gunter Bldg., Shelbyville
DR. WM. GARDNER RHEA.....Nobles Memorial Hospital, Paris
DR. E. L. RIPPY.....1915 Church St., Nashville
DR. WALTER A. RUCH.....899 Madison Ave., Memphis
DR. PERCY B. RUSSELL, JR.....616 Medical Arts Bldg., Nashville
DR. R. L. SANDERS.....899 Madison Ave., Memphis
DR. WILLIAM T. SATTERFIELD.....1188 Minna Place, Memphis
DR. WILSON SEARIGHT.....1114 Exchange Bldg., Memphis
DR. NATHANIEL S. SHOFNER.....543 Doctors Bldg., Nashville
DR. CHARLES K. SLADE.....Veterans Hospital, Mountain Home
DR. CHARLES C. SMELTZER.....521 W. Cumberland, Knoxville
DR. DAUGH W. SMITH.....Doctors Building, Nashville
DR. HUGH SMITH.....869 Madison Ave., Memphis
DR. MOORE J. SMITH, JR.....306 Medical Arts Bldg., Chattanooga
DR. FRANK W. SMYTHE.....899 Madison Ave., Memphis
DR. J. S. SPEED.....869 Madison Ave., Memphis
DR. O. B. STEGALL.....1158 Poplar, Memphis
DR. E. MALCOLM STEVENSON.....1469 Poplar, Memphis
DR. ALBERT SULLIVAN.....2318 West End Ave., Nashville
DR. HUGH F. SWINGLE, JR.....1415 North Roan St., Johnson City
DR. ROBERT C. TAYLOR.....39 South Claybrook, Memphis
DR. MORTON J. TENDLER.....899 Madison Ave., Memphis
DR. CHARLES C. TRABUE.....104 20th Ave. N., Nashville
DR. CLAUDE F. VARNER.....1304 Union, Memphis
DR. RICHARD G. WATERHOUSE.....801 Medical Arts Bldg., Knoxville
DR. DAVID H. WATERMAN.....607 Medical Arts Bldg., Knoxville
DR. EDWARD T. WEST.....Johnson City
DR. THOMAS H. WEST.....899 Madison Ave., Memphis

Dr. Joseph Edward Wheeler.....Veterans Hospital, Alexandria, La.
Dr. William A. Wiley.....First National Bank Bldg., Kingsport
Dr. Edwin L. Williams.....2106 West End Ave., Nashville
Dr. George Ed Wilson.....124 Rockwood Ave., Rockwood
Dr. Harwell Wilson.....899 Madison Ave., Memphis
Dr. Joseph E. Young, Jr.....Sweetwater Hospital, Sweetwater
Dr. D. J. Zimmermann.....119 E. First, Morristown

Junior Fellows

Dr. Spencer York Bell.....1826 W. Clinch, Knoxville
Dr. John M. Boylin.....924 Bennie-Dillon Bldg., Nashville
Dr. Charles T. Carroll.....Cantrell Bank Bldg., Etowah
Dr. L. Warren Chesney.....607 W. Main St., Knoxville
Dr. Sam M. Cooper.....1007 Medical Arts Bldg., Knoxville
Dr. Guy F. Francis.....525 McCallie Ave., Chattanooga
Dr. C. N. Gessler.....Doctors Building, Nashville
Dr. George E. Gish.....899 Madison Ave., Memphis
Dr. David F. Hoey.....604 W. Main Ave., Knoxville
Dr. Hubert L. Hotchkiss.....1115 Madison Ave., Memphis
Dr. Fred E. Hufstedler.....710 Walnut St., Knoxville
Dr. John O. Kennedy.....705 Medical Arts Bldg., Knoxville
Dr. B. H. Marshall.....206 E. College St., Fayetteville
Dr. Paul G. Morrissey, Jr.....1210 Bennie-Dillon Bldg., Nashville
Dr. John A. Range.....521 W. Cumberland Ave., Knoxville
Dr. C. Thomas Read.....Bellevue Hospital, New York 16, N. Y.
Dr. Edward G. Rivet.....1610 Pine St., New Orleans, La.
Dr. Gilbert M. Roberts, Jr.....James Building, Chattanooga
Dr. Alexander F. Russell.....232 North Second, Clarksville
Dr. J. J. Sohm.....188 South Bellevue, Memphis
Dr. Thomas F. Stevens.....807 Medical Arts Bldg., Knoxville
Dr. Claud H. Taylor.....Hartsill Bldg., Cleveland
Dr. W. A. Thomison.....Dayton
Dr. G. M. Trotter.....609 W. Main St., Knoxville
Dr. Lowell E. Vinsant.....904 W. Broadway, Maryville
Dr. James E. Watson, Jr.....4107 Fannin, Houston, Texas

VIRGINIA

Senior Fellows

Dr. C. J. Andrews.....Medical Arts Bldg., Norfolk
Dr. Mallory S. Andrews.....203 Medical Arts Bldg., Norfolk
Dr. Otis T. Amory.....6408 Huntington Ave., Newport News
Dr. Horace G. Ashburn.....1301 Ohio St., South Norfolk
Dr. Elisha Barksdale.....Allied Arts Bldg., Lynchburg
Dr. R. P. Bell.....211 W. Frederick St., Staunton
Dr. Philip Williams Boyd.....212 West Boscawen St., Winchester
Dr. W. R. Bracey.....118 E. Franklin St., Richmond
Dr. Wilbert E. Butler.....339 Boush, Norfolk

Dr. Claude C. Coleman.....1200 E. Broad St., Richmond
Dr. Joseph D. Collins.....Medical Arts Bldg., Portsmouth
Dr. F. P. Coleman.....5309 New Kent Rd., Richmond
Dr. Francis R. Crawford.....Dorothy May Bldg., Farmville
Dr. Donald S. Daniel.....Johnston-Willis Hospital, Richmond
Dr. Charles E. Davis, Jr.....705 Medical Arts Bldg., Norfolk
Dr. Paul Davis.....Lewis-Gale Hospital, Roanoke
Dr. R. M. DeHart.....212 6th St., Radford
Dr. Harry L. Denoon.....Nassawadox
Dr. Charles J. Devine.....809 Wainwright Bldg., Norfolk
Dr. John W. Devine, Jr.....610 Church St., Lynchburg
Dr. Douglas S. Divers.....73 Third St., Pulaski
Dr. Charles R. Duncan.....8th and Randolph Sts., Radford
Dr. George A. Duncan.....300 Wainwright Bldg., Norfolk
Dr. J. Morehead Emmett.....C & O Hospital, Clifton Forge
Dr. Carson L. Fifer.....114 N. Washington St., Alexandria
Dr. Robert D. Glasser.....718 Medical Arts Bldg., Norfolk
Dr. Eugene S. Groseclose.....511 Allied Arts Bldg., Lynchburg
Dr. Ray H. Grubbs.....New Altamont Hospital, Inc., Christiansburg
Dr. Bryant E. Harrell.....142 West York St., Norfolk
Dr. Herbert R. Hartwell.....31 Radford Village, Radford
Dr. Robert P. Hawkins, Jr.....C & O Hospital, Clifton Forge
Dr. William B. Hoover.....1204 Colonial Ave., Norfolk
Dr. Frank S. Johns.....Johnston-Willis Hospital, Richmond
Dr. William A. Johns.....Johnston-Willis Hospital, Richmond
Dr. Marcellus A. Johnson, Jr.....Lewis-Gale Hospital, Roanoke
Dr. Linwood D. Keyser.....909 Medical Arts Bldg., Roanoke
Dr. John R. Kight.....1204 Colonial Ave., Norfolk
Dr. Gershon J. Levin.....600 Wainwright Bldg., Norfolk
Dr. Charles H. Lupton.....Wainwright Bldg., Norfolk
Dr. J. Robert Massie, Jr.....1000 W. Grace St., Richmond
Dr. Robert Matthews.....215 Medical Arts Bldg., Norfolk
Dr. Louis A. McAlpine.....505 Washington St., Portsmouth
Dr. John M. Meredith.....1200 E. Broad St., Richmond
Dr. Richard A. Michaux.....Stuart Circle Hospital, Richmond
Dr. James A. Miller.....114 W. Boscawen St., Winchester
Dr. Charles M. Nelson.....409 Medical Arts Bldg., Richmond
Dr. Richard B. Nicholls.....605 Medical Arts Bldg., Norfolk
Dr. Bernard L. Parrish.....804 Wainwright Bldg., Norfolk
Dr. Waverly R. Payne.....91 29th St., Newport News
Dr. Herman I. Pifer.....132 N. Braddock St., Winchester
Dr. W. Arthur Porter.....229 West Bute St., Norfolk
Dr. Chester L. Riley.....212 W. Boscawen St., Winchester
Dr. Nathaniel F. Rodman.....316 Medical Arts Bldg., Norfolk
Dr. Herbert W. Rogers.....812 Medical Arts Bldg., Norfolk
Dr. Millard B. Savage.....1204 Colonial Ave., Norfolk
Dr. George W. Schenck.....515 Medical Arts Bldg., Norfolk
Dr. William P. Sellers III.....413 Medical Arts Bldg., Norfolk
Dr. Alexander M. Showalter.....Christiansburg
Dr. Josiah T. Showalter.....New Altamont Hospital, Christiansburg
Dr. William L. Sibley.....Lewis-Gale Hospital, Roanoke
Dr. C. Carroll Smith, Jr.....142 W. York St., Norfolk
Dr. E. Christopher Stuart, Jr.....21 West Boscawen St., Winchester

Dr. James L. Thomson.....405 Wainwright Bldg., Norfolk
Dr. Charles Troland.....1200 E. Broad St., Richmond
Dr. Harry H. Ware, Jr.....816 W. Franklin St., Richmond
Dr. W. R. Whitman.....Lewis-Gale Hospital, Roanoke
Dr. William B. Wiley.....1204 Colonial Ave., Norfolk

Junior Fellows

Dr. Leslie M. Bell.....114 W. Boscawen St., Winchester
Dr. J. Stuart Staley.....Homeland Hospital, Marion

WEST VIRGINIA

Senior Fellows

Dr. Randolph L. Anderson.....1021 Quarrier St., Charleston
Dr. Hugh A. Bailey.....807 Atlas Bldg., Charleston
Dr. Russell B. Bailey.....Wheeling Clinic, Wheeling
Dr. John F. Barker.....508 10th St., Huntington
Dr. William F. Beckner.....713 West Virginia Bldg., Huntington
Dr. Thomas Bess.....Potomac Valley Hospital, Keyser
Dr. James D. Bird.....906 Central Union Bldg., Wheeling
Dr. S. L. Bivens.....308 Medical Arts Bldg., Charleston
Dr. Forrest L. Blair.....809½ Market St., Parkersburg
Dr. Ray M. Bobbitt.....1139 Fourth Avenue, Huntington
Dr. A. H. Bracey.....Stevens Clinic Hospital, Welch
Dr. Bert Bradford, Jr.....603 Atlas Bldg., Charleston
Dr. James R. Brown.....1119 6th Ave., Huntington
Dr. Carroll B. Buffington.....Wheeling Clinic, Wheeling
Dr. Robert King Buford.....308 Medical Arts Bldg., Charleston
Dr. Frank J. Burian.....Williamson Memorial Hospital, Williamson
Dr. C. Stafford Clay.....425 Eleventh St., Huntington
Dr. James B. Clinton.....Masonic Building, Fairmont
Dr. Francis L. Coffey.....323 F. H. N. B. Building, Huntington
Dr. John C. Condry.....1117 Virginia St. East, Charleston
Dr. George W. Easley.....Memorial Hospital, Williamson
Dr. Rowland H. Edwards.....Stevens Clinic Hospital, Welch
Dr. Albert C. Esposito.....1211 First National Bank Bldg., Huntington
Dr. Charles F. Fisher.....321 W. Main St., Clarksburg
Dr. A. M. French.....Logan General Hospital, Logan
Dr. Everett L. Gage.....Bluefield Sanitarium, Bluefield
Dr. Keith E. Gerchow.....157 Spruce St., Morgantown
Dr. John D. German.....527½ Ninth St., Huntington
Dr. Richard D. Gill.....Wheeling Clinic, Wheeling
Dr. Milton A. Gilmore.....Box 172, Parkersburg
Dr. William T. Goche.....Gore Hotel Bldg., Clarksburg
Dr. S. William Goff.....1041½ Market St., Parkersburg
Dr. Charles L. Goodhand.....1130 Market St., Parkersburg
Dr. Sobisca S. Hall.....Empire Bank Bldg., Clarksburg
Dr. William L. Haltom.....208 S. Queen St., Martinsburg
Dr. Thomas L. Harris.....610½ Market St., Parkersburg
Dr. Herbert H. Haynes.....321 W. Main St., Clarksburg

DR. CHARLES D. HERSHEY.....Wheeling Clinic, Wheeling
DR. H. M. HILLS, JR.....1021 Quarrier St., Charleston
DR. CHARLES A. HOFFMAN..1st Huntington Nat'l Bank Bldg., Huntington
DR. EDWIN J. HUMPHREY, JR.....418 Eleventh St., Huntington
DR. JAY L. HUTCHISON.....1032 6th Avenue, Huntington
DR. WILLIAM E. IRONS.....713 W. Virginia Bldg., Huntington
DR. C. FRANCIS JASKIEWICZ.....1032 6th Avenue, Huntington
DR. W. CARL KAPPES.....423 11th St., Huntington
DR. RUSSELL KESSEL.....601 Atlas Bldg., Charleston
DR. JAMES S. KLUMPP.....713 W. Virginia Bldg., Huntington
DR. HAROLD H. KUHN.....1109 Quarrier St., Charleston
DR. THOMAS K. LAIRD.....Laird Memorial Hospital, Montgomery
DR. WILLIAM R. LAIRD.....Laird Memorial Clinic, Montgomery
DR. FRANK V. LANGFITT.....511 Union Nat'l Bank Bldg., Clarksburg
DR. WILLIAM B. MACCRACKEN.....1139 Fourth Ave., Huntington
DR. THEODORE P. MANTZ.....601 Atlas Building, Charleston
DR. JOHN S. MEIER.....40 14th St., Wheeling
DR. HU C. MYERS.....Myers Clinic Hospital, Philippi
DR. JUNIOR W. MYERS.....The Myers Clinic, Philippi
DR. BERLIN B. NICHOLSON.....414 Union Trust Bldg., Parkersburg
DR. EDWARD N. PELL.....2000 Warwood Ave., Wheeling
DR. EDWARD M. PHILLIPS.....61 14th St., Wheeling
DR. J. C. PICKETT.....508 Monongahela Bldg., Morgantown
DR. CHARLES M. POLAN.....1042 6th Avenue, Huntington
DR. MARVIN H. PORTERFIELD.....219 W. Burke St., Martinsburg
DR. MAYNARD P. PRIDE.....306 Monongahela Bldg., Morgantown
DR. J. O. RANKIN.....Wheeling Clinic, Wheeling
DR. THOMAS G. REED.....332 Medical Arts Bldg., Charleston
DR. JACK LEAHY RICHARDSON.....Memorial Hospital, Williamson
DR. FRANCIS A. SCOTT.....1139 Fourth Avenue, Huntington
DR. VICTOR S. SKAFF.....Bank of Commerce Bldg., Charleston
DR. CLAUDE B. SMITH.....1211 Virginia St., Charleston
DR. WADE H. ST. CLAIR, JR.....Bluefield Sanitarium, Bluefield
DR. WILLIAM W. STRANGE.....425 11th St., Huntington
DR. I. EWEN TAYLOR.....1119 Sixth Ave., Huntington
DR. HARRY V. THOMAS.....Empire Bank Bldg., Clarksburg
DR. MARSHALL J. THOMAS.....955 Fourth Avenue, Huntington
DR. ALBERT U. TIECHE.....Beckley Hospital, Beckley
DR. JOHN H. TROTTER.....212 High St., Morgantown
DR. WILLIAM L. VAN SANT.....Hinton
DR. GATES J. WAYBURN.....1049 Fifth Avenue, Huntington
DR. R. S. WIDMEYER.....Parkersburg
DR. R. J. WILKINSON.....1119 6th Ave., Huntington
DR. A. A. WILSON.....803 Atlas Bldg., Charleston
DR. CHAUNCEY B. WRIGHT.....206 Guaranty Bank Bldg., Huntington

JUNIOR FELLOWS

DR. THOMAS B. BAER.....F. H. N. B. Bldg., Huntington
DR. J. A. KYLE BUSH.....Myers Clinic Hospital, Philippi
DR. LOUIS R. CHABOUDY.....418 11th St., Huntington
DR. LEE F. DOBBS, JR.....1145 4th Ave., Huntington
DR. LINVILLE M. HALLORAN.....Raleigh General Hospital, Beckley

DR. MELVIN E. LEA.....Myers Clinic Hospital, Philippi
DR. ROBERT W. LUKENS.....58 14th St., Wheeling
DR. J. N. REEVES.....Atlas Bldg., Charleston
DR. BILL B. RICHMOND.....Veterans' Hospital, Huntington
DR. WOODROW W. SCOTT.....1025 9th St., Portsmouth, Ohio
DR. ROY R. SUMMERS.....315 Medical Arts Bldg., Charleston
DR. WALTER R. WILKINSON.....C. & O. Hospital, Huntington
DR. J. FRANK WILLIAMS, JR.....418 Goff Building, Clarksburg

ASSOCIATE FELLOWS

DR. HOWARD R. CREWS.....69 Fairfax, Huntington
DR. COLE D. GENGE.....F. H. N. B. Bldg., Huntington
DR. JOHN R. GODBEY.....1211 Virginia St. East, Charleston
DR. JOHN F. MORRIS.....2741 Collis Avenue, Huntington
DR. NEWMAN H. NEWHOUSE.....1211 Virginia St. East, Charleston
DR. WALTER PUTSCHAR.....Charleston General Hospital, Charleston
DR. SEIGFRIED WERTHAMMER.....C. & O. Hospital, Huntington
DR. S. D. WU.....Myers Clinic Hospital, Philippi